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REPORT

OF THE

SURGEON-GENERAL OF THE ARMY

TO THE

P.1620

SECRETARY OF WAR

FOR THE

FISCAL YEAR ENDING JUNE 30, 1891.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1891.

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REPORT

OF

THE SURGEON-GENERAL.

SURGEON-GENERAL'S OFFICE,
Washington, D. C., September 22, 1891.

SIR: I have the honor to submit herewith a statement of disbursements made during the fiscal year ended June 30, 1891, from the appropriation made by act of Congress, approved June 30, 1890, for the expenses of the Medical Department of the Army, and the balance on hand at the close of said fiscal year, viz:

Medical and Hospital Department, 1891:		
Appropriation by act approved June 13, 1890		$215,000.00
Refunded during the year		1,036.29
Total to be accounted for		216,036.29
Disbursed during the year:		
For medical and hospital supplies	$65,141.33	
Expenses of purveying depots	124.17	
For pay of employés	42,637.61	
Medical attendance and medicines	11,084.01	
Advertising	136.80	
Miscellaneous expenses	953.53	
		120,077.45
Balance on hand June 30, 1891		95,958.84

Nearly all the balance remaining on hand at the close of the fiscal year has already been or will be expended in payment for supplies contracted for, and for other obligations incurred prior to July 1, 1891.

The approximate money value of the medical and hospital supplies actually issued during the fiscal year ended June 30, 1891, was $172,000.

I have the honor to submit also a statement showing the expenditures during the last fiscal year from the appropriations for the Medical Department for prior fiscal years, and the balance on hand June 30, 1891, viz:

Medical and hospital department, 1890:		
Balance on hand July 1, 1890		$82,077.79
Refunded during the year		5,988.50
Total to be accounted for		88,066.29
Disbursed during the year:		
For medical and hospital supplies	$67,745.70	
Pay of employés	100.00	
Medical attendance and medicines	2,075.28	
Miscellaneous expenses	300.96	
		70,221.94
Balance on hand June 30, 1891		17,844.35

Medical and hospital department, 1889:		
Balance on hand July 1, 1890		$11,394.56
Disbursed during the year	$3,560.00	
Carried to surplus fund June 30, 1891	7,834.56	
		11,394.56
Medical and hospital department, 1888 and prior years:		
Certified claims:		
Reappropriated by acts approved September 30, 1890, and March 3, 1891		794.16
Disbursed during the year		794.16
Library of the Surgeon General's Office, 1890:		
Balance from previous fiscal year		571.16
Disbursed during the year		571.16
Library of the Surgeon General's Office, 1891:		
Appropriated by act of June 13, 1890		10,000.00
Disbursed during the year		8,458 92
Balance, June 30, 1891		1,541.08
Army Medical Museum, 1890:		
Balance from previous fiscal year		1,082.54
Disbursed during the year		1,082.41
Balance, June 30, 1891		.13
Army Medical Museum, 1891:		
Appropriated by act of June 13, 1890		5,000.00
Disbursed during the year		4,145.17
Balance, June 30, 1891		854.83
Medical and surgical history:		
Balance from previous fiscal year		2,711.94
Carried to the surplus fund		2,711.94
Building for Army Medical Museum:		
Balance from previous fiscal year		1,184.05
Balance June 30, 1891		1,184.05

An aggregate reduction of about $100,000 will be made in the estimates of appropriations for the next fiscal year for the entire expenses of the Medical Department. This reduction is based on the probable requirements of the service, taking into consideration the abandonment of twelve posts during the past year.

The Examining Board of Medical Officers convened in New York City in March was also assigned the duty of examining and improving the means of transportation of the sick and wounded of the Army, the equipment of the Hospital Corps, and the revision of the Standard Supply Table, the last edition of which was issued in 1883. Good progress has been made in this last important work, which will be ready for publication in the autumn.

The first ice machine was purchased by the Department in 1886, and was in operation late in the autumn of that year. Others have been issued since, and at the present time eighteen posts on our southern border and in the Indian Territory have them. At first there was some difficulty in securing proper local management and care of the apparatus, but at the present time they are generally well managed and in a satisfactory condition. Several requests have been made during the past year for the erection of these machines, but were disapproved because in each case it was ascertained that ice could be procured in the vicinity by purchase.

Artificial limbs, trusses, appliances, etc.

Artificial limbs, 1888 and prior years:		
Transfer account under act of March 3, 1875		$15.33
Disbursed during the year		15.33
Artificial limbs, 1888:		
Balance from previous fiscal year		4,479.42
Carried to the surplus fund		4,479.42
Artificial limbs, 1889:		
Balance from previous fiscal year		8,875.17
Disbursed during the fiscal year	$169.01	
Carried to the surplus fund	4,545.29	
		4,714.30
Balance, June 3, 1891		4,160.87
Artificial limbs, 1890:		
Balance from previous fiscal year		3,635.49
Disbursed during the year		2,218.93
Balance, June 30, 1891		1,416.56
Artificial limbs, 1891:		
Appropriated by act of August 30, 1890	$400,000.00	
Appopriated by act of March 3, 1891	125,000.00	
		525,000.00
Disbursed during the year		508,567.88
Balance, June 30, 1891		16,432.12
Appliances for disabled soldiers, 1889:		
Balance from previous fiscal year		604.95
Carried to the surplus fund		604.95
Appliances for disabled soldiers, 1890:		
Balance for previous fiscal year		696.44
Disbursed during the year		173.63
Balance, June 30, 1891		522.81
Appliances for disabled soldiers, 1891:		
Appropriated by act of August 30, 1890		2,000.00
Disbursed during the year		1,870.49
Balance, June 30, 1891		129.51
Expended in furnishing trusses to disabled soldiers under the Revised Statutes, sections 1176 to 1178, and act of March 3, 1879		13,031.95
Support and medical treatment of destitute patients in the city of Washington:		
Appropriated by act of August 30, 1890		19,000.00
Disbursed during the year		19,000.00

There were furnished to disabled soldiers, seamen, and marines during the year ending June 30, 1891:

Trusses	1,848
Special appliances	196
Artificial arms, in kind	18
Artificial legs, in kind	513
Commutation in place of artificial limbs or apparatus	7,790

Sections 4787–4789, Revised Statutes, provide for the issue of an artificial limb or the payment of its commuted value once every five years to those who have lost a limb or the use of a limb in the service of their country. An amendment to these statutes was approved March 3, 1891, making the period for the renewal of the limb three years instead of five; but although this amendment necessarily added two-fifths to the usual expenditure for artificial limbs, Congress made no appropriation to meet the additional expense. A careful examination of the lists of those living and entitled to limbs or their commuted value, shows that in addition to the claims paid out of the appropriation for the year ending June 30, 1892, now exhausted, there will be matured before the date mentioned—

4,518 cases, at $50 each	$225,900
210 cases, at $75 each	15,750
Total	241,650

This will necessarily constitute a deficiency for the year ending June 30, 1892.

ARMY MEDICAL MUSEUM.

The total number of specimens received during the fiscal year was 964; total number of specimens in the Museum June 30, 1891, 30,241. The following statement shows the details of additions, transfers, etc., in the different sections:

Pathological section:	
In museum June 30, 1890	9,986
Received during the year	154
In museum June 30, 1891	10,140
Anatomical section:	
In museum June 30, 1890	3,296
Exchanged during the year	8
	3,288
Received during the year	27
In museum June 30, 1891	3,315
Section of comparative anatomy:	
In museum June 30, 1890	1,717
Received during the year	0
In museum June 30, 1891	1,717
Microscopical section:	
In museum June 30, 1890	11,366
Received during the year	504
In museum June 30, 1891	11,870
Miscellaneous section:	
In museum June 30, 1890	1,227
Received during the year	105
In museum June 30, 1891	1,332
Provisional pathological section:	
In museum June 30, 1890	1,050
Transferred from provisional anatomical section	1
Received during the year	110
In museum June 30, 1891	1,161

Provisional anatomical section:

In museum June 30, 1890	643
Transferred to provisional pathological section	1
	642
Received during the year	64
In museum June 30, 1891	706

RECAPITULATION.

Total number of specimens in museum June 30, 1890	29,285
Exchanged during the year	8
	29.277
Total number received during the year	964
Total number in museum June 30, 1891	30,241

The following are some of the more interesting specimens added to the museum collection during the fiscal year ending June 30, 1891:

(1) Right tibia and fibula showing syphilitic inflammation. Presented by Surg. W. H. Forwood, U. S. Army.

(2) Portion of frontal bone from a colored boy, aged 15, showing circular depressed fracture by a stone. Presented by Dr. R. H. Munson, Washington, D. C.

(3) Lower two-thirds of left femur, fractured in middle third, from a soldier wounded at Antietam, Md., September 17, 1862; amputated April 26, 1888. Presented by Mr. A. H. Gibbs, Washington, D. C.

(4) Integuments of abdominal wall, heart, and pericardium, lungs, portion of liver, and kidneys, from a case of general cancer in a white woman, aged 34. Presented by Dr. T. C. Smith, Washington, D. C.

(5) Lower end of ileum, cæcum, part of colon and vermiform appendix, from a case of peritonitis in a white boy aged 15. Presented by Dr. H. D. Fry, Washington, D. C.

(6) Specimen of congenital absence of anus in an infant. Presented by Assistant Surg. T. W. Raymond, U. S. Army.

(7) Right femur from a case of rickets in a child, aged 47 months. Presented by Dr. Mary A. Parsons, Washington, D. C.

(8) Section of femur showing healed shot fracture, from a soldier wounded at Chancellorsville, Va., May 3, 1863; died January 23, 1891, from absorption of pus from wound. Presented by Dr. George P. Ikirt, East Liverpool, Ohio.

(9) Two transverse sections of an osteo-sarcoma of left thigh; presented by Dr. C. G. Stone, Brightwood, D. C., and plaster cast, colored after nature, of thigh and upper part of leg, showing full size of osteo-sarcoma.

(10) A series of uterine and ovarian tumors, removed by operation. Presented by Dr. J. Taber Johnson, Washington, D. C.

(11) Palmar half of right forearm and hand, showing elephantiasis; from a colored man aged 36. Presented by Acting Assistant Surg. D. S. Lamb, U. S. Army.

(12) Bullet containing piece of molar tooth, from a Confederate soldier wounded at Petersburg, Va., March 31, 1865. Presented by Dr. R. Fraser Michel, Montgomery, Ala.

(13) A series of specimens of tumors of uterus and ovary. Presented by Drs. G. C. Freeborn, J. S. Ely, and W. P. Northrup, through Dr. T. M. Prudden, New York.

(14) Portion of spleen with portion of omentum adherent, showing cancer nodules, from a white man aged 44. Presented by Medical Inspector Henry M. Wells, U. S. Navy.

(15) Two hypertrophied mammary glands, combined weight 45 pounds. Presented by Dr. C. B. Porter, Boston, Mass.

(16) A series of twenty models of female pelves, showing deformities. Purchased.

(17) A series of twenty-five wax models, showing different diseases of the eyes and eyelids. Purchased.

(18) Thirty-six wax composition casts of various parts of the body showing diseases of the skin, cancerous and syphilitic diseases, lupus, etc. Purchased.

(19) Plaster cast of the brain of the blind deaf mute, Laura Bridgman. Presented by Prof. G. Stanley Hall, Clark University, Worcester, Mass.

(20) A series of six models, life size, of uteri, showing pregnancy, respectively, at 1, 2, 3, 4, 8, and 9 months. Purchased.

(21) Tongue, fauces, larynx, etc., of a horse, showing cancer. Presented by Veterinary Surg. C. B. Robinson, Washington, D. C.

(22) Operating table made for Francois Magendie in 1831, and used by Claude Bernard. Presented by Dr. Austin Flint, New York.

(23) Seventy medals relating to medicine and medical men, medical schools, vaccination, etc.

LIBRARY.

The following table shows the additions made to the library during the fiscal year:

Description.	On hand June 30, 1890.	Added during fiscal year.	Total June 30, 1891.
Medical journals	29,017	1,031	30,048
Medical transactions	4,156	149	4,305
Bound theses	1,574	....	1,574
Bound pamphlets	1,925	114	2,039
Other medical books	61,214	2,789	64,003
Total	97,886	4,083	101,969
Medical theses	48,724	2,077	50,801
Medical pamphlets	96,203	8,317	104,520
Total	144,927	10,394	155,321

Of the total number of single pamphlets on hand there were bound during the year 3,096 in 44 volumes.

There were presented to the library during the year 529 books and 6,466 pamphlets and journals; also, 5 portraits.

Volume XII of the Index Catalogue, including from "Reger" to "Shuttleworth," forming a volume of 1,004 pages, has been printed, and the edition will be distributed as soon as bound to those institutions and persons who have received the previous volumes. The preparation of the manuscript of Volume XIII is already well advanced.

PROVIDENCE HOSPITAL.

Under the provisions of the act of August 30, 1890, making appropriation of $19,000 "for the support and medical treatment of 95 medical and surgical patients who are destitute in the city of Washington, under a contract to be made with the Providence Hospital by the Surgeon-General of the Army," a contract was duly entered into with the institution named, and has been fulfilled to my satisfaction and without complaint on the part of the persons sent there for treatment. The following is a statement of the amount of relief afforded under the appropriation:

Number of patients in hospital July 1, 1890	98
Number of patients admitted during the year	934
Total number of patients treated	1,032
Average number of patients admitted per month	78
Number remaining in hospital June 30, 1891	95
Total number of days' treatment afforded	35,782
Average number of days' treatment per patient	34⅔
Average number of patients treated per day	98
Longest term of treatment ....days	365
Shortest term of treatment ....day	1
Number of patients in hospital during the whole year	23

The patients included in the statement represent all classes of diseases, acute and chronic, except those of a contagious nature. The patients shown as having remained in hospital during the whole year are incurable, without home or friends.

ARMY AND NAVY GENERAL HOSPITAL, HOT SPRINGS, ARK.

At the beginning of the year, July 1, 1890, the number of patients in hospital was		39
Admitted during the year		123
Total		162
Returned to duty	69	
Left hospital on sick leave and for station or residence	15	
Discharged on expiration of service	3	
Discharged on surgeon's certificate of disability	34	
Died	5	
Transferred to other hospitals	2	
		128
Remaining		34

The results of the special treatment at this hospital by baths, etc., continue to be very satisfactory, particularly in the various forms of rheumatism. Of the total number of cases admitted, 60 per cent were rheumatic diseases, and 62 per cent of these were returned to duty.

Diseases of the nervous system constituted 17 per cent of the admissions; one half of them were returned to duty—a very favorable result when it is considered that seven were cases of locomotor ataxia or tabes, frequently thought to be incurable; several cases of neurasthenia or nervous depression, brought on by the great strain of our modern life with its increased mental activities, were also treated successfully.

A small percentage of diseases of the digestive and respiratory systems was admitted; the results in these were also satisfactory.

Of the total number admitted, 56 per cent were returned to duty, and this rate would be larger if allowance were made for patients who left the hospital on sick leave benefited by treatment and able in a short time thereafter to return to duty.

In most of the cases returned to their stations their future term of duty, whatever it may be, is so much gained by their treatment here. Necessarily, in a certain proportion, there is a return of the disease. Patients who leave the hospital to all appearance sound, may retain their rheumatic diathesis, ready to be roused into activity by exposure to cold or wet, or imprudence in diet. It would be interesting to trace the future history of these cases, which could be properly done only by following them up after they leave the Army, as most of them will do in a few years. There were four readmissions this year of enlisted men, all for rheumatism and neuralgia.

The steam heating introduced in the Administration building and North ward in the latter part of March, 1890, has been in regular use through last winter, and has contributed much to the comfort of the patients. The only means of heating the rooms before that was by open grates, and as there was no way of heating the halls and passages they were always cold in severe weather and a constant danger to invalids. In winter the temperature is frequently down to freezing and occasionally to zero. The buildings of the hospital seem to have been constructed for a Florida climate, and it has required much care and several alterations to meet these severe weather changes. By next winter the steam heating will be extended to all the other buildings.

A covered passage has been constructed, 165 feet long by 10 feet wide, connecting the main building with the bath house; this enables patients to pass to and from their baths without exposure to the weather. It is a frame building, ornamental in appearance, and harmonizing with the other structures. Nearly all the rooms in the building have been papered or calcimined this year and the wards painted inside.

The work on the hospital grounds has been suspended this year for lack of appropriation, except so much as was necessary to protect the work already done. The boundary wall along the street front requires an extension of 180 feet to complete it; and also coping and iron railing similar to the work already finished along the front. There are also some sidewalk concreting and brick gutters required to complete the work on the plan originally laid down, and necessary to protect the surface already finished from damage by heavy rains. Estimates for these purposes have been already forwarded.

The large reservoir, capacity 250,000 gallons, mentioned in the report of last year, has been constructed on the reservation by the Interior Department; it receives all the hot water issuing from springs below the level of the bath houses and which formerly ran to waste.

The total flow of the hot springs has been estimated lately by an engineer officer of the U. S. Navy at 1,250,000 gallons a day. The number of bath tubs supplied in the various bath houses is 409, not including this hospital, and there is also a free Government bath house in charge of the Interior Department, with three large bathing tanks, in which about 500 baths are given daily. It was intended that all the bath houses should be supplied by the pump from this reservoir, but as it is found that they get a sufficient supply for the summer season by natural flow from springs above their level, the pump is not in operation and may not be required even next winter.

It was expected that the hospital would be authorized to draw its water supply from this source and save the expense of pumping, but it seems now as if it would have to continue drawing from its own spring and operating its own pump. The access to the springs is by a dark and inconvenient passage, under a bath house, as stated in the report of last year. Representation has been made to the War and Interior Departments, and it is hoped the matter will be remedied.

HOSPITAL CORPS.

Under the Army Regulations governing the allotment of Hospital Corps members, the number demanded by the distribution of troops of the line, the arsenals, engineer stations, West Point, recruiting depots, and other independent commands, is as follows:

Hospital stewards	145
Acting hospital stewards	100
Privates	560

There are now in service:

Hospital stewards	124
Acting hospital stewards	71
Privates	530

Vacancies exist for:

Hospital stewards	21
Acting hospital stewards	29
Privates	30
Civilians	10

Five hospital stewards were tried by general court-martial for various offenses, 1 being sentenced to dishonorable discharge from the Army.

One acting hospital steward was tried for a minor offense. Twenty-one privates were tried, of whom 1 was acquitted, 14 received minor sentences, and 6 were dishonorably discharged.

The number of members of the corps who were discharged by expiration of service and did not reënlist was 105, or 62.87 per cent of those discharged.

The number of desertions from the corps amounted to 10 during the year, or 1.3 per cent of the force.

The percentage attained by the candidates examined for promotion was as follows:

For hospital steward:	
95 to 97 per cent	5
90 to 95 per cent	6
85 to 90 per cent	9
80 to 85 per cent	4
75 to 80 per cent	5
70 to 75 per cent	5
For acting hospital steward:	
95 to 98 per cent	7
90 to 95 per cent	11
85 to 90 per cent	11
80 to 85 per cent	6
75 to 80 per cent	2
Below 75 per cent	none

Table showing loss and gain to the Hospital Corps for the year ending June 30, 1891.

	Hospital stewards.	Acting hospital stewards.	Privates.	Matrons.
GAIN.				
In service July 1, 1890	137	62	562	160
Reënlisted	22	4	39	
Promoted after examination	20			
Rejoined from desertion			4	
Detailed from privates of Hospital Corps		38		
Transferred from the line			210	
Enlisted			8	
Reënlisted from other corps			13	
Reduced from acting hospital stewards			3	
Appointed				104
Total to be accounted for	179	104	839	264
Total gain	42	42	277	104
LOSS.				
Discharges:				
Expiration of service	27	9	131	
For disability	2		10	
By sentence of general court-martial	1		6	
By order	10	2	100	120
Promoted		19	39	
Retired	12		4	
Died	2		5	
Reduced to private		3		
Transferred to the line of the Army			4	
Deserted	1		9	
Dropped			1	
Total loss	55	33	309	120
In service June 30, 1891	124	71	530	144

Record of examinations in Hospital Corps for year ending June 30, 1891.

	Hospital stewards.	Acting hospital stewards.		Hospital stewards.	Acting hospital stewards.
Number of applications	44	48	Examination authorized	42	45
Withdrawn		2	Declined examination	2	3
Deserted	1		Died		1
Not entitled to examination		1	Failed	7	4
To be examined in next class	1		Found qualified	33	37
Examination authorized	42	45			
	44	48		42	45

CIVILIANS.

Applications received	20
Failed to accept conditions	20

Members of the Hospital Corps on duty in Sioux campaign.

Hospital stewards	10
Acting hospital stewards	16
Privates	80
At division field hospital:	
Hospital stewards	1
Acting hospital stewards	2
Privates	12
Casualties:	
Hospital steward killed	1

The services of the Hospital Corps during the Sioux campaign have demonstrated its value as an organization for the care of the wounded. On the battle-field at the action on Wounded Knee Creek two of its members rescued a wounded officer from extreme peril under circumstances which fully entitled them to the certificate of merit which they received as their reward, while the services that the remainder rendered were so orderly and well regulated that not only our own wounded men but wounded Indians were, with great promptness and dispatch, removed and cared for in the field hospitals which were extemporized for their benefit.

To increase its efficiency the Major-General Commanding approved my recommendation for the establishment of companies of instruction for the Hospital Corps at military posts west of the Mississippi, and for this purpose they are now in process of organization at Forts Riley, D. A. Russell, and Keogh. Each company will be fully supplied with the necessary field equipment, including tentage, field hospital furniture, etc., and the men will receive daily instruction by object lessons in first aid to the wounded, in the management of field hospitals, in cookery, and in such military duties as are necessary to secure the highest state of efficiency for field service.

To further increase its efficiency it appears to me needful to offer inducements to desirable men to enter its ranks. Under the old system of details for hospital duty the hospital attendant received $23.50 per month; as a member of the Hospital Corps he gets only $13. Hence, men who would like to enter the corps will not do so because they can do better financially by remaining with a company and becoming corporals and sergeants; and many desirable men leave the corps on the expiration of their term of service,—of 131 men discharged by expiration of term during the year, 105 did not reënlist. The Medical Department is thus in the position of teaching special duties to men who do not stay with it after they are taught. I therefore urgently recommend that $6 be added to the pay of the private of the Hospital Corps, and trust that favorable action will be taken on the recommendation.

MEDICAL OFFICERS.

The requirements of the Army as regards medical officers during the past year have been as follows:

Number of permanent posts and stations	122
Number of temporary posts and substations	28
Total	150

There were 143 medical officers reported to this office as having been on duty with scouting parties and other field service during the year.

Army medical examining boards were convened in New York City on the 15th day of October, 1890, and the 16th day of March, 1891, and remained in session one month each, for the examination of candidates. The following is a recapitulation of the work performed by the boards during their sessions:

Number of candidates invited to appear for examination	50
Number of candidates found qualified	5
Number of candidates rejected	19
Number of candidates rejected for physical disability	12
Number of candidates who withdrew after partial examination	8
Total number examined	44
Number of candidates who refused examination	1
Number of candidates who failed to appear for examination	5
	50

Deaths.—Since the date of last report, 1 surgeon-general with the rank of brigadier-general, 1 surgeon with the rank of major, 1 assistant surgeon with the rank of captain, 1 colonel, retired, 1 captain, retired.

Retirements.—One surgeon-general with the rank of brigadier-general, 1 assistant medical purveyor with the rank of lieutenant colonel, 1 surgeon with the rank of lieutenant-colonel, 2 surgeons with the rank of major, 4 assistant surgeons with the rank of captain, 2 medical storekeepers with the rank of captain, 1 captain and assistant surgeon with the rank of major, 1 captain and assistant surgeon wholly retired.

Promotions.—One lieutenant-colonel and assistant medical purveyor to be surgeon with the rank of colonel, 1 surgeon with the rank of lieutenant-colonel to be surgeon with the rank of colonel, 2 surgeons with the rank of major to be assistant medical purveyors with the rank of lieutenant-colonel, 2 surgeons with the rank of major to be surgeons with the rank of lieutenant-colonel, 7 assistant surgeons with the rank of captain to be surgeons with the rank of major, 6 assistant surgeons with the rank of first lieutenant to be assistant surgeons with the rank of captain after five years' service. (Act of June 23, 1874.)

Appointments.—One chief medical purveyor to be surgeon-general with the rank of brigadier-general, 1 surgeon and colonel to be surgeon-general with the rank of brigadier-general, 1 surgeon and colonel to be chief medical purveyor, 4 assistant surgeons with the rank of first lieutenant.*

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* One assistant surgeon with the rank of first lieutenant has not yet accepted his appointment.

Vacancies.—There are now eleven vacancies in the Medical Department and one approved candidate who has not yet accepted appointment.

Noneffective medical officers.—There are eight medical officers on sick leave of absence, two of whom have been found incapacitated for active service and recommended for retirement by army boards. There are three medical officers on ordinary leave of absence.

INSPECTIONS BY MEDICAL DIRECTORS.

The inspections by medical directors of departments required by paragraph 1662 of the Army Regulations have been generally made, and their reports indicate a high state of efficiency in the personnel of the Department. The records of the various hospitals are as a rule correctly kept, the reports and returns required by the Department are duly rendered, the medical supplies are abundant in quantity and excellent in quality, and the duties of the officers and men have been performed to the satisfaction of their superiors.

The general health of the troops and the sanitary and hygienic condition of the garrisons will be treated of further on in detail.

Concerning the drills by the Hospital Corps and company bearers for field service, Col. Joseph R. Smith, medical director of the Department of Arizona, reports as follows:

> For the regular attendance of the hospital corps at drill and instruction, and for their proficiency therein, the post surgeon alone is responsible, and must be censured for their want of proficiency.
>
> Not so, however, with the company bearers. For their attendance or nonattendance the responsibility rests with the commanding officer of the post or the company commander, one or both.
>
> The records show that in some cases the bearers have not been designated as required by Army Regulations, par. 1574, and in the great proportion of the cases the concurrence of the post surgeon, required by the same regulations, is entirely ignored.
>
> Almost always the commanding officer fixes the time of drill according to Army Regulations, 1575; yet the company bearers fail to appear at the hour fixed, and though in many cases the post surgeon reports the absence, yet the matter is not remedied.
>
> * * * * * * *
>
> I add, that every commanding officer and company commander whom I know, who has personally witnessed the drill, has agreed to its importance, and felt inclined to compel attendance of his company bearers.

As to discipline he says:

> It is respectfully submitted that drunkards should be at once dishonorably discharged, and the attempt to discipline them abandoned. This, because such grave consequences are liable to follow their neglect or error in the hospital ward; that it is a moral crime to thus expose the helpless sick to such danger. A drunken nurse in one minute of error may cause injury that can never be remedied.
>
> Every year's experience still proves the advantage to the service resulting from the addition of the Hospital Corps to the Army organization.

On the subject of surplus medical and hospital property Col. Smith also adds:

> A great part of this has accumulated in consequence of the abandonment of neighboring posts, whose property had to be transported to the nearest suitable place to be cared for. It is not easy to decide what is the best disposition to make of this property in every case. At the great majority of the military posts, or in their vicinity, there is no demand whatever for such property, and a sale at auction would realize but a moiety of their value. Concerning some, it is doubtful whether at a purveying depot they would sell for enough to meet the expense of transportation from post to depot.

IDENTIFICATION OF DESERTERS, ETC.

It gives me great pleasure to be able to report the successful institution by this office of a system which, if efficiently carried out, will do much to suppress desertion and prevent the enlistment of men of bad character. This system is based on the possibility of identifying an individual by the permanent marks or scars that he bears on his body. Every one has some congenital marks on his person, and there are few who have attained the age for military service that the accidents of life have not marked or scarred in one way or another. Moreover, many of the men who enlist have been at considerable trouble, thoughtlessly of course in this connection, to secure their own identification by indelible tattooings. An appreciation of these facts led the officers in charge of the administrative and sanitary divisions of this office to believe that if an accurate record of these personal marks could be made there would be no difficulty in recognizing a deserter or any other individual whose identity was in question. They held that if they were in possession of an "outline figure card," back and front, for every man in the Army, on which was represented accurately all personal peculiarities, no one who had deserted or was discharged for special cause could come in as a recruit without being connected with his former record. To put these views into thorough working practice they required a card for every man in the ranks, a card for every recruit as soon as enlisted, and a prompt notification of all changes in the personnel of the Army, particularly by desertion and discharge for fraudulent enlistment. With this armamentarium they held that no one whose card was on file could come in as a recruit without immediate identification. "Repeaters," as they are called, are the worst class of men that enter the ranks. They exercise an evil influence over the young soldier, such as in prisons is exercised by the hardened criminal over the young and thoughtless offender. To identify and exclude such men from the ranks would undoubtedly be a valuable service, and authority was therefore granted to the officers who proposed the system for their exclusion to proceed with it; but as the preparation of cards giving the personal markings of every man involved a great amount of labor, the authority was restricted to calling only for the cards of those who were enlisted subsequent to the issuance of the order.

On April 1, 1889, the order was issued. Several months were passed in the accumulation of cards, and many months necessarily elapsed before any considerable number of those whose cards had been collected had deserted or been discharged for fraud in their enlistment. Nevertheless, so rapid was the desertion movement in our Army that this office conceived itself in a position to cope with it about the beginning of the last fiscal year. Since then 34 recruits have been identified as deserters, 26 as ex-convicts, and 16 as frauds of a minor grade, making in all 76 cases of identification. These results show that if instead of laboriously and tediously gathering its data to enable it to *begin* its work, this office had been authorized to start with an outline figure card for every enlisted man, a much greater and more immediate good would have been accomplished. In progress of time, however, working on these lines, every man will be represented in this office by his card, when it will be impossible for a man who has a bad record to come into the ranks undetected. So much has been accomplished under all the difficulties attending the laborious starting of this system that I have no hesitancy in recommending that facilities be granted for its perfection by calling for the cards of all men now in service.

RECRUITING.

During the year 19,926 recruits were examined; white 18,437, colored 1,489. The rejections numbered 13,135; white 12,179, colored 956. Of every thousand candidates for enlistment 659.2 were refused, the white rate of rejection being 660.6, the colored 642.0. To defects of vision and eye diseases were attributed the disability of 86.5 of every thousand candidates; to diseases of the digestive system and developmental diseases, 50.7 each; to genito-urinary diseases, 37.2; to diseases of the circulation, 31.9. Age was the cause in 45.7 of the thousand, 35.5 being too young and 10.2 too old. Height, under or over, in 22.8, and weight or size in 43.3; while 15.4 were refused on account of character, and 16.9 for deficient knowledge of the English language. Further details may be found in Table XXII*.

In his sanitary report for December Maj. D. G. Caldwell, depot surgeon at Jefferson Barracks, Mo., states that—

> During the year 1,101 recruits were examined on their arrival from the various rendezvous, and 57 for enlistment at this depot. Of those examined upon arrival 70 were rejected and brought before a board of inspectors; of the 57 examined for enlistment 13 were rejected. Defects, which were not considered actually disqualifying, were noted and recorded in 137 cases of accepted recruits. This course was dictated by a desire to retain in the Army all men likely to render satisfactory service. I am of opinion that a somewhat better class of recruits has been secured during the past year, and that the system of summarily discharging men found on trial to be worthless or incorrigible has proved to be of great benefit to the service.

HEALTH OF THE ARMY.

The rate of admission to sick report during the year, 1,384 per thousand of strength, is somewhat higher than the rate for the previous year, 1,315; but the number of men constantly sick, 42.71 per thousand, compares favorably with 44.12 in the previous year, and 43.49 as the annual average of the decade. The number of days lost on account of sickness averaged 15.6 as compared with 16.1 in the previous year, and with 15.9 as the average of the previous decade.

The principal causes of the 1,384 admissions per thousand of strength during the year were: Injuries, 244; diseases of the digestive system, 171; influenza, 168; diarrhœal diseases, 124, and diseases of the respiratory organs, 111. Considered in relation to noneffectiveness, injuries took the first place, having been the occasion of 7.85 of the total of 42.71 constantly sick per thousand of strength; venereal diseases took second place as a disabling cause, accounting for 4.86 of the noneffective rate; disorders of the digestive system came third, with a nonefficient rate of 3.35; diseases of the respiratory organs, chiefly bronchitis, fourth, with a rate of 3.34, and malarial diseases fifth, with a rate of 2.79. Malarial fevers, which came second in the list of causes of admission last year, have no place this year among the five prominent causes. They would have taken fifth place, however, with 93 per thousand of strength, but for the accidental interposition of influenza. It is to be noted that injuries caused only 244 admissions per thousand of strength as compared with 249 in the previous year, although the present record includes a total of 116 gunshot wounds, most of which occurred during the Indian troubles near Pine Ridge Agency in December last.

The mean strength of the command from which medical reports were received during the year amounted to 24,234 men—white, 21,910; colored, 2,324. The admission rate for the white troops was 1,347, as compared with 1,319 for the previous year, and with 1,529 for the previous decade; while the corresponding rates for the colored troops were 1,733, 1,281, and 1,688. The number of colored men constantly sick was 48, and the number of days lost by sickness 17.4 for each man.

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* Page 144.

The causes of admission were the same among the colored as among the white troops; but malarial fevers and alcoholism were less frequent. Influenza, diseases of the digestive system, diarrhœal diseases, headache, neuralgias, and rheumatism were much more prevalent among them than among the whites. There was also a rate of 105 of venereal cases per thousand of strength among the colored men as against 72 among the white troops.

In comparing our sick rate with those of the last published record of the British army on home stations it is found that our admission rate is higher, because in our Army every man who is excused from any part of his duty, no matter how trivial the disabling cause, is taken on sick report; but the noneflicient rate, which is a more accurate exponent of sickness, was less with us, we having 42.71 per thousand of strength constantly sick as compared with the British rate of 44.45.

Army.	Mean Strength.	Ratios per 1,000 of mean strength.						Average sick time to each soldier.
		Admissions.	Deaths.			Discharges.	Constantly noneffective.	
			Disease.	Injury.	Total.			
United States, 1890	24,234	1,384.25	5.25	3.45	8.69	23.01	42.71	15.6
United States, 1889	25,008	1,315.02	3.95	2.38	6.33	22.79	44.12	16.1
United States, 1879–1888	23,828	1,544.22	5.98	3.25	9.23	31.99	43.49	15.9
Austria-Hungary, 1889	281,569	951.29	4.41	1.89	6.30	44.73	39.51	14.4
Belgium, 1889	46,471	1,230.57	3.96	.43	4.39	17.02	27.26	10.0
Great Britain (home), 1888	101,695	740.89	4.72	.80	5.52	15.91	44.45	16.3
Prussia, Saxony, Würtemberg, 1887–'88	417,104	804.13	2.38	.86	3.24	32.20	29.16	10.9

In the army of Austria-Hungary the causes of admission in order of prominence were (1) diseases of the integument, (2) those of the digestive system, (3) bronchitis and pneumonia, (4) injuries, and (5) venereal diseases. In the army of Belgium the causes were (1) diseases of the digestive system, (2) injuries, (3) diseases of the integument, (4) bronchitis and pneumonia, and (5) venereal diseases. In the army of Great Britain on duty in the United Kingdom they were (1) venereal diseases, (2) injuries, (3) diseases of the digestive system, (4) integumentary diseases, and (5) bronchitis and pneumonia; and in the army of Prussia (1) integumentary diseases, (2) injuries, (3) diseases of the digestive system, (4) bronchitis and pneumonia, and (5) rheumatism. In all these armies, and in our own, tonsillitis or quinsy formed a large proportion of the cases recorded under the heading of diseases of the digestive system.

The death rate of 8.69 per thousand of strength represents 232 deaths, 203 whites and 29 colored; but as 92 of these resulted from injuries, 85 white and 7 colored, the death rate from disease was only 5.25—4.88 per thousand for the white and 8.74 for the colored troops. The lowest annual death rate from disease in the history of our Army was that recorded in the last annual report, 3.95; the second best record was that of the year 1885, when the rate for disease was 4.76. The rate for the present year is but little in advance of the latter, notwithstanding that the troops were considerably exposed during its progress on account of the operations against the Sioux Indians.

Among the principal causes of death were typhoid fever, credited with 13 deaths; diseases of the nervous system, such as apoplexy, insanity, paralysis, etc., with 21; pulmonary phthisis, 19; pneumonia, 14; gunshot wounds, 61; drowning, 12, and other injuries, 14. The death rate among the white troops was 8.40 per thousand, among the colored troops 11.52. The rate from injuries was larger among the whites, 3.52, than among the colored, 2.78; but, as usual, the rate from disease among the latter, 8.74, was nearly double that furnished by the white troops.

The discharge rate of the Army, 23.01 per thousand of strength, represented 614 men, 542 white and 72 colored; 62 of the 614 resulted from injury, 552 from disease. Of the latter 71 were caused by venereal disease, 67 by epilepsy, insanity, and other diseases of the nervous system, 56 by heart disease and other affections of the circulatory system, 42 by pulmonary phthisis, and 52 by muscular and chronic articular rheumatism; and in addition to the injuries above mentioned 32 were occasioned by rupture, an accident pure and simple, yet placed by medical statisticians among diseases of the organs of digestion. The ratio of discharges among the whites was 22.43, among the colored 28.61.

The relative number of discharges has been materially lessened during the past two years. The rate now recorded, 23.01, per thousand of strength, compares satisfactorily with that of last year, 22.79, and both are a great improvement on the average annual rate of the decade, 1879–1888, 31.99. This saving of men to the service has been the result of two causes, the care exercised by medical directors in having every doubtful case treated under their personal observation prior to discharge, and the beneficial effects, particularly in chronic rheumatism, of treatment at the Army and Navy Hospital, Hot Springs, Ark.

The discharge rate of the army of Austria-Hungary in 1889 was 44.73; of the army of Prussia, Saxony, Würtemberg, in 1887–'88, 32.20; of the Belgian army, 17.02, and of the army of Great Britain, on the home stations, 15.91. The most striking point observable in comparing the discharges from our Army with those from the armies of Europe is one that was specially noted and commented on in the last annual report from this office, the small number of discharges for venereal diseases from the European ranks. While we discharged 71 men during the year on account of these diseases from our mean strength of 24,234 men, the British discharged only 98 from their home strength of over 101,000; Austria-Hungary 20 from its strength of over 280,000; Prussia 17 from its army of over 417,000, and the Belgians none from their army of over 46,000; and this is not because such diseases were rare in those armies, for, as already stated, venereal diseases did not constitute among our troops one of the five principal causes of admission to sick report, while in the European armies cited, with the exception of the Prussian, they were thus prominent: In the British army they came first with a rate of 224 per thousand as compared with 75.21, the rate of our Army, or 1 affected out of every 4 in the British ranks during the year, against 1 in 13.3 among our troops.

HEALTH OF THE MILITARY DEPARTMENTS.

The statistics of the various departments show considerable variation in all the rates. The admissions ranged from 1,134 per thousand of strength in the Department of Dakota to 1,626 in that of Texas, the

Army averaging 1,384. The death rate varied from 2.59 per thousand living in the Department of California to 11.65 in the Department of the Missouri, the Army average being 8.69. The rate of discharge for disability ran from 14.42 per thousand in the Department of the Platte to 30.25 in that of California, the average of the Army being 23.01. The noneffective rate or number constantly sick per thousand of strength varied from 32.63 in the Department of Dakota to 50.75 in that of Texas, the Army average being 42.71. The duration of each case on the sick list varied but little from the average of 11.3 days. It was shortened in the Department of the Platte to 9.9 days and lengthened in that of the Missouri to 11.5 days. Giving due consideration to all the rates it is evident that the best record is presented by the Department of the Platte and the worst by the Department of Texas.

If venereal diseases, alcoholism, and vaccinia be omitted from the statistics the admission rate is found to vary from 807 in the Department of Dakota to 1,216 in the Department of Texas; the death rate from 1.73 in the Department of California to 6.62 in that of the Missouri; the rate of discharge for disability from 10.48 in the Department of the Platte to 24.20 in California, and the number constantly sick from 21.96 in Dakota to 34.50 in Texas. The Department of Dakota appears from these statistics to be that in which the soldier is least exposed to the causes of disease and the accidents of a military life, and the Departments of Texas and Arizona those in which these causes are at their maximum.

DEPARTMENT OF THE EAST.

In this department, strength 5,527 men, the admission rate was 1,517 per thousand of strength as compared with 1,384 in the Army as a whole; the death rate 6.15 as compared with 8.69; the discharge rate 23.52, differing but little from the Army average of 23.01; the noneffective rate 44.77, a little larger than the Army rate of 42.71; and the number of days' treatment of each case 10.8, the general average being 11.03.

The principal items constituting the excess of admissions in this department were vaccinia 80 per thousand against 32 in the Army; venereal diseases, 107 as against 75; tonsillitis and digestive troubles, 191 as against 171, and alcoholism 57 as against 41.

Omitting the smaller posts, the ratios of which have little practical value, it is found that the increase in the admissions in this department was chiefly due to the rates of Fort McPherson, Ga., 2,489; Jackson Barracks, La.; 2,163, Columbus Barracks, Ohio, 1,876; Willets Point, N. Y., 1,812; Fort Monroe, Va., 1,709; Davids Island, New York, 1,643, and Fort Hamilton, N. Y., 1,626.

The largest non-effective rates were recorded at Columbus Barracks, Ohio, 77.55; Jackson Barracks, La., 70.64; Mount Vernon Barracks, Ala., 68.57; St. Francis Barracks, Fla., 66.76; Fort McHenry, Md., 63.73, and Fort McPherson, Ga., 61.16.

The best record was shown by Fort Adams, R. I., 782 admissions and 25.38 constantly sick.

DEPARTMENT OF THE PLATTE.

In this department, showing 3,052 men, the admission rate was 1,251, the death rate 8.19, the discharge rate 14.42, the noneffective rate 33.96, and the number of days of treatment to each case 9.9.

The principal items which caused the lower admission rate were 54 cases of malarial disease less per thousand of strength than the average of the Army, 29 less of venereal disease, 29 of influenza, and 27 of vaccinia. On the other hand, the rates for alcoholism and rheumatism were somewhat greater than the Army average.

The highest rates in this department were given by Fort Washakie, Wyo., 2,036 admissions and 49.98 noneffective; and by Fort Robinson, Nebr., 1,896 and 44.51. The best record was given by Fort Omaha, Nebr., 672 admissions and 31.83 noneffective.

DEPARTMENT OF DAKOTA.

In this department, strength 4,132 men, the admission rate was 1,134, the death rate 13.31, the discharges for disability 16.70, the noneffective rate 32.63, and the number of day's treatment to each case 10.5.

The chief causes of the lessened admission rate in this department were 72 cases of malarial disease, less than the average of the Army, 42 of diarrhœal diseases, 36 of venereal, 23 of diseases of the digestive system, 18 of alcoholism, and 15 of boils, abscesses, etc.

The highest rates in this department were given by Fort Maginnis, Mont., admissions 1,737, and noneffective 45.35. On the other hand, Fort Keogh, Mont., had only 674 admissions and 25.66 noneffective.

DEPARTMENT OF THE MISSOURI.

In this department, strength 3,776, the admissions were 1,381 per thousand of strength, the deaths 11.65, the discharges 26.48, the number constantly sick 43.33, and the duration of each case 11.5 days.

There were 90 cases of malarial disease per thousand of strength more than in the Army at large; but as an offset the rate for influenza was 39 per thousand of strength less; for boils, abscesses, etc., 26, and for alcoholism 18. The rates of diseases of the respiratory organs and of the digestive system were also somewhat less than the average.

The posts which mainly contributed to sustain the high rates in this department were Fort Sill, Okla., with 2,552 admissions and 47.41 noneffective, Fort Elliott, Tex., with 1,984 and 76.71, and Fort Reno, Okla., with 1,922 and 56.53. The best record was given by the prison guard at Fort Leavenworth, with 939 admissions and 18.53 noneffective.

DEPARTMENT OF TEXAS.

In this department, strength 2,095 men, the highest departmental admission rate was found, 1,626; the death rate was 6.68, the discharge rate 26.25, the noneffective rate 50.75, and the duration of each case 11.4 days.

The excess of admissions in this department consisted mainly of 151 cases of malarial disease per thousand of strength more than in the Army at large, with an excess of 77 diarrhœal cases, 43 venereal, 36 headaches and neuralgias, and 28 ephemeral fevers; diseases of the digestive and respiratory organs were, however, a little less frequent than the average.

The posts which mainly contributed to these high rates were Fort Sam Houston with 2,431 admissions and 63.25 noneffective, Fort Brown with 1,881 and 65.23, and Fort Clark with 1,669 and 65.25. The best record was given by Fort McIntosh, 738 admissions and 25.31 noneffective.

DEPARTMENT OF CALIFORNIA.

In this department, strength 1,157 men, the admission rate was 1,201, the death rate 2.59, the discharge rate 30.25, the noneffective rate 36.54, and the average duration of each case 11.1 days.

The principal differences between the diseases of this department and those of the Army at large may be expressed by the statements that there were in it 24 cases of malarial disease per thousand of strength less than the average, 66 less of diarrhœal diseases, 17 less of vaccinia, 10 less of alcoholism, 27 less of headache and neuralgia, and 48 less of diseases of the digestive system. On the other hand, there were relatively more of certain other diseases, the chief items being 26 more of dermatitis from heat and other causes of tegumentary irritation, and 19 of diseases of the respiratory organs.

The highest rates were recorded at the Presidio of San Francisco, admissions 1,413 and noneffective 45.96. The best record was given by Angel Island, 920 admissions and 27.44 noneffective.

DEPARTMENT OF THE COLUMBIA.

In this department, strength 1,464 men, the admission rate was 1,331, the death rate 7.51, the discharge rate 20.49, the noneffective rate 40.18, and the average duration of each case 11 days.

Although the admission rate differed but little from the average of the Army, there were many differences in the character of the prevailing diseases. Thus, per thousand of strength, the Army average exceeded the cases in this department by 35 of influenza, 37 of malarial diseases, 41 of diarrhœal diseases, 12 of venereal diseases, 24 of vaccinia, and 9 of boils, abscesses, etc., while as an offset there were 80 cases more of diseases of the respiratory organs, 21 of alcoholism, 8 of rheumatism, and 16 of injuries.

The post which had the highest rates was Fort Sherman, Idaho, with 1,838 admissions and 41.15 constantly sick.

DEPARTMENT OF ARIZONA.

In this department, strength 2,984 men, the admission rate was 1,568, the death rate 9.38, the discharge rate 29.49, the noneffective rate 46.90, and the average duration of each case 10.9 days.

The diseases that prevailed to a greater extent than in the Army at large were influenza, with an excess of 126 cases per thousand of strength over the general average, injuries with an excess of 51; diseases of the digestive system with 43, headache and neuralgia with 13, and rheumatism with 34. On the other hand, the Army average exceeded that of the department by 29 cases of vaccinia, 19 of diseases of the respiratory system, and 25 of malarial disease. This department had formerly the reputation of being a notoriously malarious region; but by sanitary measures at the occupied posts and the abandonment of those in insalubrious localities the department has now a better record in this respect than the average of our military stations.

The posts which contributed most to the high rates of the department were Fort Apache, Ariz., 2,372 admissions and 55.51 noneffective; Fort Grant, Ariz., 2,208 and 50.30; Fort Wingate, N. Mex., 1,788 and 60.82; Fort Stanton, N. Mex , 1,662 and 67.83, and Whipple Barracks, Ariz., 1,685 and 61.80. The posts with the best records were Fort Huachuca, Ariz., with 702 and 22.02, and Fort Union, N. Mex., with 775 and 26.53.

HEALTH OF INDIVIDUAL POSTS.

Reports were received during the year from 139 military stations; 14 of these were garrisoned by 400 to 642 men each, average 474; 11 by 308 to 393, average 347; 19 by 200 to 296, average 251; 31 by 100 to 198, average 138; and 64 by 5 to 99, average 54. Those having a strength of over 200 men had rates of admission and nonefficiency greater than the average of the Army, while the smaller posts as a rule had lesser rates. This is to be attributed in part to the fact that at the large posts men with trivial ailments were taken on sick report, while at the smaller posts, where every available man was required for duty, the same ailment would be treated without a formal recognition on the sick reports.

Of the fourteen large posts four had rates of admission and noneffectiveness considerably larger than the average of the Army: Fort Sam Houston, Tex., had 2,431 admissions per thousand of strength and 63.25 constantly sick; Columbus Barracks, Ohio, 1,876 and 77.55; Fort Clark, Tex., 1,669 and 65.25; and Davids Island, New York, 1,643 and 52.45. Fort Monroe, Va., gave also a higher record than the Army as a whole. Willets Point, N. Y., had a larger admission rate, and Fort Leavenworth, Kans., a larger noneffective rate, with the highest death rate of the fourteen posts, 15.36 per thousand of strength, one-third of which was due to injuries.

At Fort Sam Houston malarial and typhoid fevers, diarrhœal and venereal diseases made up the excess both of admissions and nonefficiency. The large rates at Columbus Barracks, Ohio, were due to the vaccination of recruits and the prevalence of venereal diseases. The latter occasioned 380 admissions per thousand of strength, with 24.74 constantly sick. Singularly enough, with this record alcoholism furnished a rate of only 18 as compared with 40.73 in the Army as a whole; injuries were infrequent at this depot. At Fort Clark, Tex., malarial fevers and venereal diseases occasioned the increased rates, the former causing 451 admissions per thousand of strength, and 18.38 of noneffectiveness, and the latter 153.85 and 12.69. The excess of admissions at Davids Island, New York, was chiefly the result of vaccinating the newly enlisted men; at Fort Monroe, Va., it was due to diarrhœal troubles; at Willets Point, N. Y., to diarrhœa and alcoholism, with rheumatism and bronchitis as probably the indirect consequences of the latter. The high rate at Fort Leavenworth was attributable in part to typhoid and malarial fevers, but chiefly to injuries.

Columbus Barracks, Ohio, Jefferson Barracks, Mo., and Fort Leavenworth, Kans., gave the highest rates of discharge for disability, 63.75, 41.87, and 40.96, respectively. At Columbus Barracks the absolute number was 32—3 for injuries and 29 for diseases, of which 21 were due to venereal; at Jefferson Barracks 17—1 from injury and 7 from venereal, and at Fort Leavenworth 24—3 from injuries and none from venereal.

The best record among the large posts was presented by Fort Omaha, Nebr.; admission rate 672, noneffective rate 31.83.

Of the eleven stations garrisoned by 300 to 400 men each, Fort Sill, Okla., and Fort Grant, Ariz., had the largest admission rates, 2,552 and 2,208, respectively, while Fort Wingate, N. Mex., and Fort Custer, Mont., had the largest noneffective rates, 60.82 and 57.91. Malarial fevers and diarrhœa constituted the excess at Fort Sill; influenza, diseases of the respiratory organs, and injuries at Fort Grant. Influenza, venereal diseases, rheumatism, and injuries occasioned the large noneffective rate at Fort Wingate; influenza and bronchitis, eye diseases and injuries, at Fort Custer. Fort Keogh, Mont., presented the excellent rates of 674 for admissions and 25.66 for noneffectiveness, and this although the admission rate for alcoholism, 51.87, was considerably above the average. Fort D. A. Russell, Wyo., and Fort Meade, S. Dak., also had good records, the former 1,052 admissions, with 27.61 of noneffectiveness; the latter 854, with 35.34. At Fort D. A. Russell the largest item on the sick reports was an admission rate of 135 for bronchitis, as compared with 74 for the Army as a whole; of venereal diseases, only one case was recorded at this post during the year. At Fort Meade only four cases of alcoholism were reported, but two of these terminated fatally, the only deaths that occurred at the post.

Fort Robinson, Nebr., had the highest death rate of these eleven posts, 25.45 per thousand, the absolute number being 10—2 from injury, 3 from pneumonia, 2 from diseases of respiration, 2 from diseases of the kidneys, and 1 from typhoid fever. Fort Grant came second, with a rate of 21.41, yielded by 7 deaths—2 from injuries, 2 from heart disease, and 1 each from typho-malarial fever and diseases of the respiratory organs and kidneys.

Fort Sill and Fort Wingate had the highest rates of discharge, 36.36 and 33.43, respectively, the absolute number in both instances being 12.

Of the nineteen stations garrisoned by 200 to 300 men each, Fort Apache, Ariz., had an admission rate of 2,372, with 55.51 constantly noneffective, but the highest noneffective rate was shown by Whipple Barracks, Ariz., 61.80, with an admission rate of 1,685. The rates at Fort Reno, Okla., and at Fort Sherman, Idaho, were also unusually high. At Fort Apache influenza, malarial fevers, diarrhœa, rheumatism, neuralgia, diseases of the digestive system, and injuries occasioned the increased admission rate; but injuries and malarial fevers contributed most of the inefficiency. At Whipple Barracks the high rate was caused by a general increase of all diseases; the admission rate for alcoholism was unusually large, 157.67, with 1 man per thousand constantly sick. At this post five cases of typhoid fever, two of consumption, and four of heart disease added materially to the rate of nonefficiency. The causes of the increased rates at Fort Reno were malarial fevers, diarrhœa, catarrhs, diseases of the digestive system, of the integument, and injuries; at Fort Sherman influenza, alcoholism, rheumatism, bronchitis, digestive disorders, and injuries.

The best record among these nineteen stations was given by Fort Huachuca, in Southern Arizona; admission rate 702, with 22.02 noneffective, and this although its admissions for influenza alone constituted 225 per thousand.

Washington Barracks, D. C., Whipple Barracks, and Fort Apache, Ariz., had the largest rates of discharge, 66.67, 58.09, and 45.45, respectively, the absolute numbers being 17, 14, and 11 men. Seven of the 17 at the first-mentioned post were due to heart disease.

Of the thirty-one posts garrisoned by 100 to 200 men each, Fort McPherson, Ga.; Fort Washakie, Wyo.; and Fort Bowie, Ariz., had admission rates of over 2,000 per thousand of strength. At Fort McPherson diarrhœal and venereal diseases, alcoholism, rheumatism, and bronchitis contributed to the excess; influenza and injuries at Fort Washakie, and tonsillitis, other diseases of the digestive system and injuries at Fort Bowie. Leavenworth prison had the best record among these posts; admission rate 939, noneffective 18.53. Fort Adams, R. I.; Fort Sheridan, Ill.; Angel Island, Cal.; Fort McKinney, Wyo.; Fort Union, N. Mex.; and Forts McIntosh, Bliss, and Ringgold, Tex., had also good records during the year.

Of the sixty four small posts having a strength of less than 100 men each, Jackson Barracks, La., had the highest rates; admission 2,163, noneffective 70.64, due mainly to malarial, venereal, and diarrhœal diseases, alcoholism, and injuries. San Diego Barracks, Cal., appears on this list as having the highest noneffective rate, but this was because men affected with rheumatism, bronchitis, and consumption were transferred to that station, to give them the benefit of its temperate and equable climate. During two and a half years, ending June 30, 1891, 20 cases were treated, and of these only 3, or 15 per cent, were cured. Of 9 cases of phthisis the result was favorable in none. In view of this experience Col. Joseph R. Smith, medical director of the department, has recommended that no other such cases be transferred to this post.

Of all the military stations in the country Fort Sill, Okla., had the highest rate of admission to sick report, 2,552 per thousand of strength, closely followed by Fort McPherson, Ga., Fort Sam Houston, Tex., Forts Apache and Grant, Ariz., and Jackson Barracks, La.

Omitting San Diego Barracks, which was in a measure a general hospital, Columbus Barracks, Ohio, had the largest noneffective rate, 77.55 per thousand of strength; Fort Elliott, Tex., followed with 76.71; Jackson Barracks, La., with 70.64; MountVernon Barracks, Ala., with 68.57; and Fort Stanton, N. Mex., with 67.83. The rate at Columbus Barracks has always been high, but at the other posts mentioned there has been much variation during the past few years, showing that the high rate of the present year is due to the special conditions of the year rather than to the localities or the permanent local conditions,

At the three recruiting depots the admissions were considerably increased by the results of vaccination. Deducting these, Jefferson Barracks would have the low rate of 833 per thousand of strength, of which 167 were occasioned by venereal diseases. The small rate from diseases in general was due to the freedom of the post from influenza, and low rates for diarrhœa, rheumatism, bronchitis, diseases of the digestive organs, and alcoholism. With a similar deduction Davids Island would show an admission rate of 1,205.07, 105.99 of which were venereal cases. With suppression of the vaccination Columbus Barracks would have had an admission rate of 1,555.77, 380.46 of which were caused by venereal diseases, yielding a discharge rate of 41.83 and a noneffective rate of 24.74 per thousand of strength. But for this class of diseases the recruiting depots, particularly Jefferson Barracks and Davids Island, would have compared favorably with any of our large posts.

THE PREVALENCE OF SPECIAL DISEASES.

SPECIFIC FEBRILE AND ACUTE INFECTIOUS DISEASES.

The specific febrile and acute infectious diseases had high rates during the year, 177.89 admissions per thousand of strength; but if the rate for influenza is deducted from this there is left a rate of only 9.94, 5.24 of which were due to typhoid fever and 2.48 to measles.

Cerebro spinal fever.—One case, terminating favorably, was reported from Fort Abraham Lincoln, N. Dak.

Dengue.—Six cases occurred at Fort McIntosh, Tex., and 1 at St. Francis Barracks, Fla.

Diphtheria.—Only 5 cases occurred among the troops: 2 at Fort Porter, N. Y.; 2 at Fort Trumbull, Conn.; and 1, fatal, at Frankford Arsenal, Pa. The second case at Fort Trumbull was in the person of the private of the hospital corps in attendance on the first. Deadly outbreaks of this disease among the children were reported from Jefferson Barracks, Mo., Fort Hamilton and West Point, N. Y. At the first-mentioned post 4 cases, 3 of which were fatal, were developed in the family of the quartermaster-sergeant twenty-four days after moving into a set of quarters which had been visited by the disease in 1886.

A rigid quarantine was established, and the building was afterwards thoroughly disinfected. Three families suffered at Fort Hamilton, in one, 8 cases with 2 deaths; in another, 3 cases with 2 deaths, and in a third, 2 cases, with recovery in both. At West Point the disease was first reported as virulent in November, 1889, when all the 6 children of one family were taken sick and 4 died. The next outbreak was in February, 1890, when almost simultaneously two families, living half a mile apart and having no intercourse with each other, became prostrated. Of 15 children in these 2 families 13 suffered from the disease and 5 died. A fatal case occurred in another family in March, and 1, ending favorably, in April. Capt. W. F. Carter reported on these cases as follows:

> The disease made its appearance in the more modern and substantial as well as in the oldest and most dilapidated buildings on the reservation and in houses widely apart. The first case appeared in the house of Sergeant Emerick. This family lived in the south side of the second building on the south end of a row of nine houses comprising a settlement known as "Logtown." These buildings are old frame structures, each divided into two sets of quarters. They are arranged in a straight line along the brow of a hill which rises rather abruptly (the road intervening) in front, and falls away quite precipitately in rear along the whole line. From Emerick's house the disease extended to the house of Private Brannigan, who occupied a comparatively new brick building standing by itself and in an apparently healthy locality. It is believed, however, that the cesspool in rear of the quarters was at the time in bad condition. The next cases occurred in Private Dwyer's quarters, a brick structure situated near the northern extremity of Logtown. The next appearance of the disease was in the family of Private Eiseman, of the band, who occupied two rooms situated near the center of the band barracks, a substantial brick building. Subsequent to this a case developed in the Cadet Barracks. This case was removed to an upper small room in the Cadet Hospital. The building occupied by the Emericks is, as already stated, an old frame structure. Beneath it is a cellar coextensive with the superstructure. The cellar walls are of stone. The walls of the house are composed of clapboards outside, laths and plaster inside, and the intermediate framework. The set, or half the house, consists of one room on the first and one on the second floor. Back of the lower room, and overhanging the slope of the hill, is a small addition comprising two small rooms. The cellar, being cut into the side of the hill seems to intercept the natural springs in the soil, and is therefore more or less damp or wet. It has no means of ventilation except the door and a small opening in the upper part of its wall. Both the door and this opening are probably kept closed in cold weather. The heavy sills supporting the framework of the house have become rotten; they have given way under the weight of the house, allowing it to settle down more or less upon the cellar wall. The plastering is old, cracked, and imperfect. The floors are presumably old and more or less porous. As this is an old building, it is reasonable to infer that the soil about it has to some extent become fouled. The above description applies to all the houses comprising the older portion of Logtown. The stone buildings occupied by Brannigan and Dwyer are good, substantial structures, in fairly good condition. Eiseman's quarters (in the band barracks) are in good condition. The rooms in the cadet barracks and in the cadet hospital are in excellent condition. In stating the condition as good and excellent, reference is had to the state of general repair and cleanliness.
>
> I premise my recommendations with the statement that every house and room in which diphtheria occurred were thoroughly cleaned and disinfected. In most cases the walls and woodwork were scraped and thoroughly washed with disinfecting fluid and the rooms fumigated with sulphurous acid. This work was done under the intelligent direction and faithful supervision of the medical officers of the post, to whom every possible assistance was given by the superintendent of the Academy and the post quartermaster. To the prompt and thorough sanitary quarantine measures adopted is due the fact that diphtheria and scarlet fever did not extend more widely over a somewhat promising field. It might seem that ample precautions had been taken to eradicate the specific poison of this disease; but it should be borne in mind that the specific morbific agent in diphtheria is possessed of great tenacity and virulence. It clings to solid and semisolid bodies, and in this way is transmitted even after a long time. There is hardly any disease which can cling so tenaciously to dwellings and furniture. * * * Possessing, therefore, a knowledge born of bitter experience as to the dangers that may linger after an epidemic of diphtheria, I think we would not do more than prudence dictates if we take additional sanitary

precautions before the beginning of cold weather, as during the winter season, when ventilation of these houses will be cut off by the closure of doors and windows, the condition becomes much more favorable for the development of this disease. It is therefore recommended that in the separate brick buildings and in the rooms of private Eiseman, the walls, the ceilings, and all woodwork (including doors and windows, door, window, and mantel facings, baseboards, cornices, and floors) be again thoroughly washed down with disinfectants; that the solution be thrown into cracks and crevices, about all facings, baseboards, mantels, floors, etc.; that all the furniture, carpets, bedding, and drapery be removed and thoroughly shaken or beaten, aired or sunned, and, where practicable, washed. After the washing with the disinfecting solution the walls may be again whitewashed and the woodwork painted. It is not thought necessary to apply these measures in the rooms of the cadet barracks and hospital, as the work is believed to have been done thoroughly in the first instance, and the rooms have since been cleaned and painted. In the case of the house in which the four Emerick children died, I can not but express the opinion that it is unsafe. The rooms of this house were, I think, fumigated; but fumigations are of doubtful efficacy in an old building having so many inaccessible crevices in and behind the plastering and between it and the clapboards and in the interstices of the decaying timbers. Besides this, and were there no specific poison about the structure, there are more or less active chemical changes going on in the old woodwork and in the organic matter about the premises, a condition which in itself may stand in a causative relation to the disease in question. In my opinion this house should be abandoned, and for the reasons stated in this report. I think all the old buildings of this class should be vacated and torn down as soon as it is possible to procure other quarters for the families now occupying them. I do not believe it would be economy to attempt to put them in good condition.

Scarlet fever.—Only 6 cases of scarlet fever occurred among the troops: 2 at Fort Keogh, Mont., and 1 each at Columbus Barracks, Ohio; Fort Logan, Colo.; Fort McHenry, Md., and Fort Maginnis, Mont. This fever was present also at Davids Island and Watertown Arsenal, N. Y.; at Newport Barracks, Ky., and Forts Davis and McPherson. Tex.; but only 1 case or 1 family was affected at each. Prompt isolation confined the disease, and disinfection of the person, clothing, bedding, and dwelling prevented its recurrence. At West Point, however, these measures were not so successful. The epidemic was carried over from the previous year. Eight cases occurred among the children in January, and in April 3 cases among the cadets.

Measles.—Sixty cases of this disease occurred among the enlisted men: 21 among the recruits at Columbus Barracks, Ohio; 6 at Fort Barrancas, Fla.; 5 at Fort Buford, N. Dak., and the remainder scattered among 16 different posts, where prompt isolation and disinfection prevented its spread from the 1 or 2 cases first attacked. The measures adopted to repress the disease at Columbus Barracks failed so far as the recruits were concerned, but were attended with best results among the families and children; only 9 children became affected, 5 in the families of officers and 4 in those of enlisted men. At Fort Niobrara, Nebr., an officer's child in the prodromic stage of the disease attended school, and 12 children, representing 9 families, became infected. Thirty-three cases resulted from this invasion, 30 among the families and 3 among the soldiers; all ended favorably. At Fort Buford, 16 children became affected; at Mount Vernon Barracks, Ala., 5, and at Jackson Barracks, La., 4. Several cases occurred among the families of quartermaster's employés at Fort Riley, Kans.

Smallpox.—One case of confluent smallpox occurred in an enlisted man at Fort Marcy, N. Mex., and a case of varioloid at West Point, N. Y., in an officer's child. Proper sanitary measures prevented any undesirable developments from these cases.

Typhoid fever.—There were 127 cases of this fever during the year, 13 of which were fatal, 7 cases with 1 death having occurred among the colored troops. The disease was reported from 38 posts. Fort Sam Houston, Tex., had 29 cases in July and August; Fort Elliott, Tex., 12;

Fort Leavenworth, Kans., 8; Fort Custer, Mont., and Fort Walla Walla, Wash., 6 each. Five posts had 5 cases each, one post 4 cases, two 3 cases, six 2 cases, and nineteen 1 case each.

The admission rate for the Army as a whole was 5.24 per thousand of strength. The rate for the infantry was a little higher than the average; for the cavalry considerably higher, 7.36; and for the young cavalry officers considerably higher than for their men; for the artillery notably lower, 3.04, than the average; and for the Hospital Corps and its officers who were in constant contact with the cases, only 1.19. Men between the ages of 20 and 24 had the largest rate, 10.61, and the officers of that age suffered more than their men, 33.90. The Irish, German, and English in our Army had about the average rate, the native Americans somewhat less, 4.89; Canadians and natives of the continent of Europe, Germans excepted, nearly double the average rate.

The medical officers at some of the posts, as Fort Myer, Va., Fort Sherman, Idaho, and Mount Vernon Barracks, Ala., hold the disease to have been imported. Others, as those at Fort Niobrara Nebr., Whipple Barracks, Ariz., and Fort Leavenworth, Kans., allow the local origin of the cases, but are undecided as to the manner of the invasion. At Fort Elliott, Tex., Acting Assistant Surg. Whitney shows the immediate cessation of the outbreak on the closing up of a polluted well; Capt. Bushnell, at Camp Pilot Butte, Wyo., argues that the disease is occasionally propagated by infected dust settling on the water supplies; Capt. Merrill, at Fort Reno, and Capt. Rafferty, at Fort Sam Houston, Tex., also considered the water supply to be implicated in the propagation. Some of the cases at the last-mentioned post were afterwards acknowledged to have been adynamic remittents.

FORT ELLIOTT, TEX. (*Acting Assistant Surg. Whitney*).—Heretofore the water supply has been obtained from a well near some old disused privy vaults in the neighborhood of the post hospital. The infection of such wells is usually only a question of time, dependent on the character of the soil and the direction of surface and subsoil drainage. That this well has become infected is shown by the history of the recent outbreak of typhoid fever. The post surgeon reported under date of July 19: "The first case appeared June 28, and there are now under treatment thirteen cases." The well was closed July 19, and one case only, July 21, has appeared since. As no change in the sanitary condition of the post has been made, except the discontinuance of the use of the well water, it appears conclusive that the well was the source of infection.

CAMP PILOT BUTTE, WYO. (*Capt. G. E. Bushnell*).—A great danger arises from the dust as the carrier of the poison of typhoid fever, which is the disease most prevalent in Rock Springs. It is the universal practice here to throw all kinds of slops and refuse upon the ground adjacent to the house. The ground is thus soon saturated with organic matter and becomes a breeding place for the germs of disease. The discharges of typhoid-fever patients are often thrown recklessly upon the ground, where they dry and are disseminated by the winds. During the frequent dust storms water barrels and food exposed to the air are liable to become infected, and thus the disease is spread indefinitely. Although this theory will not account for all cases of the disease, it is borne out by many facts upon which it is unnecessary to enlarge further than to say that the town of Green River has the same water supply, but is comparatively exempt from the disease. This shows that the infection is not in the water as delivered to the consumer at Rock Springs. The immunity of the Chinese from typhoid fever, notwithstanding their filthy surroundings, is to be ascribed to their habit of eating only thoroughly cooked food and drinking only tea. The practical deduction is that the water barrels used to contain drinking water should be well covered and protected from dust.

FORT RENO, OKLA. (*Capt. J. C. Merrill*).—The death of Private Ackerman, Troop K, Fifth Cavalry, on June 27, caused, as the autopsy showed, by typhoid fever, again brings up the subject of the bad water supply of this post as used by all except the commissioned officers; but the work now in progress on a new and deep well renders any further remarks superfluous until the result is known. I have verbally renewed the recommendation made by Capt. Hoff, in March, 1888, that the well on the west side of the parade ground be permanently closed. The water at that time was shown by an analysis made at the Surgeon-General's Office to be impure a picious, if not actually dangerous, and the surface drainage of the past two years has certainly not rendered it less so. There is little doubt from statements made to me by Private Ackerman before his death, that his disease was contracted within this post, and not at Reno City or El Reno; but whether from the well or river water it is impossible to say.

FORT SAM HOUSTON, TEX. (*Capt. Ogden Rafferty*).—During the absence of the troops at the target range at the fair grounds at San Antonio, Tex., the garrison was thoroughly policed, and the privies in the rear of the barracks were cleaned, the floors cemented, the walls washed and disinfected, and instructions given for a complete removal of the sewage by the dry-earth system, with final disposition at the new Government crematory. The hospital was cleaned, and the tents erected in the yard for the sick were supplied with additional air-spaces by means of poles and tent-flies, over which, in the heated part of the day, a continuous spray was caused to play.

Notwithstanding the precaution taken, on the return of the soldiers (July 13) after an absence of seven days, the sickness continued and increased with a marked ratio. Toward the latter part of July some of the hospital cases that at first were believed to be remittent fever, began taking on typhoid symptoms. At this time considerable trouble was experienced in arriving at diagnosis, owing to the absence of diarrhœa and delirium and the beneficial results obtained from heroic doses of quinine and brandy. Later in the summer the true state of affairs became apparent, the thermometric charts showing clearly that the febrile cases were cases of true typhoid. Dismissing at once the various theories that have proved so perplexing in locating the cause of this sickness, we will consider the one that, on mature deliberation, seems to be the most probable.

On consulting the register it will be found that but one of the 28 cases diagnosticated as typhoid fever antedates the encampment of the soldiers with the State troops at the fair grounds, and more will be written of that case later. Not only do the San Pedro Creek and acequia, but also the Alamo acequia and other streams, empty into the river above the fair grounds. To prove that typhoid fever was positively present at the time in the city, you are invited to consult the statements of mortality furnished by the city board of health. During the month of June, 1890, there were 4 deaths from enteric fever, in July 7, in August 12. Now, taking the lowest percentage of deaths that occurred during several epidemics, as furnished by Dr. Austin Flint, which was 16 per cent, one can readily see that there must have been at least 143 cases in the city during the summer, and, considering our own 28 cases, with two relapses, without a death, the figures are probably below the actual number.

The history of all our 28 cases, with five exceptions, shows that these men were at the encampment, that they used the water taken from the river for drinking and cooking purposes before the pipes from the reservoir were brought into camp, and that during the whole encampment they frequently bathed in the river. Five of the men whose cases were diagnosticated as typhoid fever were not at the encampment, and, so far as can be learned, drank nothing but reservoir water that was taken from the pipes of the city waterworks. * * *

Having found, of the 5 cases in men who were not at the encampment with the militia, that 4 were remittent fever and that a reasonable doubt may be expressed in the diagnosis of the fifth case, your attention is invited to a consideration of the following well-known facts:

(1) That, with the above-mentioned exceptions, every man with typhoid fever was at the encampment and drank the river water. (2) That typhoid fever was present at the time in the city. (3) That the city is without a system of sewerage. (4) That it is a common sight to see the Mexicans washing clothing in the river and creek that flow through the city. (5) That these acequias flow through the yards of many ignorant people. (6) That the encampment was below the junction of all these water courses with the river. (7) That the city waterworks, which are at the head of the San Antonio River, are on grounds from which the public are excluded.

After a consideration of these data, together with the knowledge that not a case occurred among the light battery men who were present at the encampment, but forbidden to use any but the hydrant water, you will agree with me probably in attributing this sickness to the water taken from the river during the encampment with the State forces at the fair grounds.

Influenza.—The epidemic of this disease, the so-called grippe, was developed in Boston and New York during the last week of December, 1889, and thence it spread with few exceptions to our military stations during the course of January and February, 1890. The epidemic reached its height at a given place on an average of 12 days from its invasion and lasted about 30 days. The average number of admissions among the white troops was 155.36, among the colored troops 286.58 per thousand of strength; average of the Army, 167.95. The average duration of each case was 5.9 days; six deaths resulted directly from the disease, five among the white and one among the colored men in a total of 4,070 cases. During the visitation from 5 to 90 per cent, average about 33 per cent, of each affected command suffered, but it prevailed as extensively among the camp attachés and in the neighboring civilian settlements as at the posts. The Department of Arizona had the largest admission rate from this cause, 294 per thousand, and of the posts Fort Grant in this department had the largest rate, 654; Fort Washakie, Wyo., and Fort Maginnis, Mont., had also large rates, 630 and 631 respectively. At a few of the stations the medical officers did not recognize the presence of this disease, as at Fort Schuyler, Allegheny Arsenal, Newport Barracks, Fort Thomas, and St. Francis Barracks in the Department of the East, at Jefferson Barracks, Mo., Fort McKinney, Wyo., Forts Pembina and Sully, Dak., Forts Reno, Brown, Davis, McIntosh, and camp at Eagle Pass, Texas, and Fort Gaston, Cal. At some of these stations the medical officer is positive in his assertion that no epidemic influence was felt. At Fort McKinney, for instance, Captain Suter reported that no case had occurred differing in any way from the ordinary pharyngeal and bronchial catarrhs always prevalent at his post during the winter. At Fort Davis the post surgeon gave emphasis to his exemption by attributing it to such causes as altitude, etc.; and at Fort Sidney, Nebr., the medical director called upon the post surgeon to justify his conclusions concerning the absence of an epidemic influenza by charting the curves of all catarrhal diseases of the air passages for the corresponding seasons of 1888–'89 and 1889–'90 and this chart he says must be accepted as supporting the reiterated opinion of an intelligent medical officer on the point at issue. Nevertheless it is possible that the disease may have visited some of the posts mentioned without leaving its mark upon the records, for I find Capt. P. R. Egan, at Fort McIntosh, remarking in February:

> During the past month an officer, on a hunting leave, returned to this post with a certificate from a neighboring physician that he was suffering from la grippe. The symptoms were those of gastro-intestinal catarrh and rachialgia. His convalescence was not especially protracted. No other member of his family was affected. In another household the father, who is subject to "bilious attacks," suffered from gastro-intestinal catarrh. This was followed by coryza and conjunctivitis. His convalescence was rapid. Two of his children suffered from naso-laryngeal catarrh soon afterwards. The previous month, however, all his five children were treated for similar catarrhs. In yet another family the mother was taken sick with severe chest pains, and catarrh of the respiratory mucous membrane extending to the larger bronchial tubes. Her recovery was somewhat protracted. Her husband suffered about the same time from coryza and supraorbital pain, but no other member of the family was attacked. Several of the enlisted men suffered from colds, but only one so severely as to require excuse from duty. In no case was there evidence of an epidemic influence. Whether these catarrhs were anything more than the ordinary colds due to the sudden changes of this climate and season is a matter of doubt. If, as claimed by the local physicians, they are due to a great wave of influenza passing round the world, then influenza on the Baltic, the Danube, and the Seine must be essentially different from influenza on the Rio Grande.

The noteworthy symptoms affecting the nervous system were frontal headache, lumbar pains, aching in the lower limbs, insomnia, and prostration. Nasal, laryngeal, pharyngeal, or bronchial catarrhs were essentials; and accelerated action of the heart was followed by depression. The temperature ranged from 100° F. to 104.6°, and in one case, with secondary pneumonia, to 105.8°. Anorexia, nausea, vomiting, and constipation were generally present. The complications were bronchitis, pleurisy, pneumonia, inflammation of the middle ear, and erysipelas of the head. Relapses or recurrences were not uncommon. Convalescence was often protracted.

Early in the year, and while the details of the epidemic were fresh in memory, a call was made by this office for special reports from every military station; and that the reports might be susceptible of comparison one with the other certain points were presented for special investigation and report. Much labor was spent upon these reports by medical officers, but the investigation was unproductive. Two of our medical directors who showed special interest in the results of observations came to exactly opposite conclusions regarding the propagation of the disease. One held it proved by the progress of the epidemic through his department that the disease was spread by the diffusion of its germ through the atmosphere; and although it may be contagious, this is not the chief mode of the propagation. The existence of an atmospheric wave or cloud, so to speak, of microscopic germs he held to be no more impossible than the diffusion of smoke from burning forests over an immense extent of territory or the occasional migration of myriads of locusts darkening the sky and covering the earth. The other showing that the disease traveled westward notwithstanding a west wind and that its invasion was later in the season in proportion to the length of stage travel to reach the post, and that the more distant posts escaped the epidemic entirely, came to the conclusion that an epidemic wave was wholly inconsistent with the facts and that propagation could be explained only on the assumption of a personal contagion carried from place to place by rail or other means of personal transportation.

MALARIAL FEVERS.

The admission-rate of malarial diseases has fallen during the year to 92.93, as compared with 120 in 1889, and with 162.03, the annual average of the preceding decade; the number constantly sick, 2.79, is also an improvement on the rate of the preceding year, 3.25.

The cavalry suffered more from these fevers than the other arms of the service. Its rate was 128.22, the rate of the infantry a little below the average, of the artillery a little above, and the officers in all considerably less than the men. As regards age the highest rates were given by men of 20 to 24 years, 135.23, while officers of the same age gave only 50.85. The rates of the native Americans were about the same as the average of the Army; those of the Irish and Germans in the ranks were somewhat higher.

The record of Fort Brown, Tex., was much improved during the year. Instead of 1,676 admissions per thousand of strength, as in 1889, it had only 325.91, and instead of 38.58 of non-effectiveness, it had only 8.32. This alone does much to account for the lowering of the malarial rate of the Army. Seven posts had relatively more admissions and non-effectives than Fort Brown. Fort Sill, Okla., and Fort Clark, Tex., had the highest rates among the large posts, the former 754.55 admissions and 12.12 non-effective, the latter 451.14 and 18.38.

DIARRHŒAL DISEASES.

These diseases gave rise to an admission rate of 124.29 as compared with 118.40 during the previous year and 185.15 during the previous decade. The average number of days during which each case was under treatment was 4.3 for diarrhœa and 14.6 for dysentery. They affected the enlisted men more than the officers, the cavalry, and particularly the artillery, more than the infantry; men from 20 to 29 more than those who were older. The native American had the average rate; all other nationalities had the rate smaller except the English, Irish, and Canadians. Fort Sam Houston, Tex., with an admission rate of 430.70, and a non-effective rate of 5.75, and Fort Sill, Okla, with 384.84 and 7.13, were the posts at which these diseases were most prevalent.

RHEUMATISM.

This constitutional affection gave an admission rate of 83.19 during the year, as compared with 93 during the previous year and with 110.73 during the previous decade. The non-effective rate was 4.05, as compared with 4.78 and 3.01, respectively, during the previous year and decade. The posts that had relatively the largest number of admissions were Fort Canby, Wash., Rock Island Arsenal, Ill., Forts Apache and Grant, Ariz., and Fort Washakie, Wyo., the rates ranging from 171.17 at the last to 222.22 at the first mentioned station. The posts with the largest number non-effective were Benicia Barracks, Cal., Rock Island Arsenal, Ill., Fort McHenry, Md., Fort Grant, Ariz, and Fort Snelling, Minn., the rates varying from 8.41 to 11.32.

VENEREAL DISEASES.

The admission rates were 72.02 for the white troops, 105.43 for the colored; total for the Army, 75.22, as compared with 84.66 during the previous year, and with 79.76 as the annual average of the previous decade. The non-effective rate was 4.86, as compared with 5.61 of the previous year, and the number of discharges 71 men, equivalent to a rate of 2.66 per thousand, was considerably better than the 3.52 of the year 1889.

The cavalry and infantry had less, the artillery more, than the average number of cases. The highest rates were found among the recruits, 191.93, and among men from 20 to 24 years of age, 143.15. The native American had a larger rate than men of any other nativity excepting the small French element in the Army.

The post that gave the highest rates was Columbus Barracks, Ohio: admissions, 380.46; non-effective, 24.74, and discharges, 41.83. Jefferson Barracks, Mo., gave 167.49, 10.31, and 17.24; Davids Island, New York, 105.99, 5.86, and no discharges. Of the 71 men discharged, 21 cases occurred at Columbus Barracks, Ohio, and 7 at Jefferson Barracks, Mo.

ALCOHOLISM.

The rates of admission were 44.45 for the white troops, 5.59 for the colored, equal to a total of 40.73 for the Army, as against 41.43 in 1889, and 56.68 the annual average of the previous decade.

The cavalry had the best rate, 20.44; the engineers by far the worst, 147.89; the infantry and artillery rates are nearly one-third higher than the average. Among the enlisted men drunkenness appears to increase with age. Thus the rate for men of 20 to 24 years is 13.30; 25 to 29, 25.52; 30 to 34, 47.55; 35 to 39, 86.13; 40 to 44, 111.36; 45 to 50, 103.02, and 50 to 54, 158.08.

The rate of the native American, 37.95, is under the average, as is also that of most men of Continental Europe; but the Irish rate, 89.54, brings up the average. The absolute number of reported cases was 987, only 13 of which occurred among the colored troops; 5 ended fatally and 4 were discharged as unfit for service.

In the appendix will be found* a list of our military stations arranged in the order of the prevalence of alcoholism at each during the year. It is satisfactory to note that so many of the larger posts are at the lower end of the list.

PULMONARY CONSUMPTION.

The rates for this disease differed but little from those of 1889 or of the preceding decade: Admissions, 3.26, as compared with 3.32 and 3.55; deaths 0.71, as compared with 0.44 and 0.57; discharges, 1.57, as compared with 1.50 and 2.08. The absolute number of cases was 79, 11 of which were among the colored men; 42 were discharged; 19 died; average duration of treatment in each case, 92.5 days.

The admission rate was largest in the artillery, 4.94. It was largest among men between the ages of 20 and 24, and appeared to lessen in frequency with advancing age. The rate of the native American did not differ much from the average of the Army, but the rate of the Irish soldier, 4.91, was more than double that of the natives of Germany, 2.03.

The 79 cases were taken on sick report at sixty different posts. The largest number at any one post was 4, at Fort Robinson, Nebr., and at Fort Clark, Tex.

PNEUMONIA AND PLEURISY.

Ninety-six cases of pneumonia occurred during the year, of which 14 were fatal, as compared with 130 cases and 19 deaths in 1889, and with 181 cases and 39 deaths in 1888. The colored troops contributed 19 of the cases and 5 deaths. The average duration of treatment was 37.5 days.

The admission rate of the Army was 3.96 per thousand of strength, a little lower than this for the infantry, a little higher for the cavalry and artillery. Age did not appear to influence the liability to attack. Irishmen were relatively less frequently its victims than men of other nationalities. Twelve cases with 3 deaths were recorded at Fort Robinson, Nebr., 6 with 1 death at Columbus Barracks, Ohio; 5 with 1 death at Fort Leavenworth, Kans.; and 5 with no death at Fort Douglas, Utah. Six posts reported 3 cases each; ten, 2 cases each; and thirty, 1 case each.

Pleurisy caused 65 admissions, 2 deaths, and 3 discharges. Fort Robinson, Nebr., had 10 of these cases, all among colored men.

INJURIES.

The admission rate for injuries, 243.71, is much the same as that for 1889, 248.72, or of the decade, 245.67; but on account of the casualties in the Sioux campaign the death-rate was higher than usual, 3.45, as compared with 2.38 in the previous year and 3.25, the average of the decade.

Of the 243.71 admissions per thousand of strength about one-half resulted from *sprains* and *contusions*, and one-fourth from *cuts* and *lacerations*.

Heatstroke occasioned a total of 73 admissions, and *frostbite* 60; 2 of the former and 1 of the latter were afterward discharged for disability; no death was recorded from either of these causes. There were 62 *dislocations* with 3 consequent discharges, and 166 *fractures* with 2 deaths and 17 discharges.

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* Page 105.

One hundred and sixteen cases of *gunshot wound* were entered on the reports, resulting in 7 deaths and 20 discharges; but in addition there were 54 cases in which death was instantaneous or followed so soon after receipt of the injury that the men were not taken on sick report. The number of these casualties was therefore 170, of which 2 with no deaths, occurred during the firing of salutes; 10 with no death during the reloading of cartridges; 6 with no death at target practice; 10 with no death while hunting; 23 with 7 deaths in personal encounters; 35 with 6 deaths by accident; 15, all fatal, by suicide, and 69 with 33 deaths in the fight with Indians near Pine Ridge Agency.

Twelve deaths from *drowning* were reported; of these 3 occurred while boating, 6 while bathing, 2 by other accidents, 1 while trying to desert, and 1 in the effort to save other lives.

Sixteen cases of *suicide* were reported during the year: 1 officer and 15 enlisted men; infantry, 13; cavalry, 2, and general service, 1. Gunshot was the means selected in 15 cases, and poison in 1 case; in 6 the cause was alcoholism, in 3 temporary insanity, in 2 despondency, in 1 distaste for the service, in 1 nervous depression following influenza, in 3 uncertain. The nationalities were, United States, 9; German, 2; Norwegian, 2; and Irish, Scotch, and Canadian, 1 each. The ages 23, 26, 32, and 34, 2 each; 25, 27, 28, 29, 30, 31, 33, and 39, 1 each. Four occurred in May, 3 in February, 2 each in January and November, and 1 each in April, June, July, September, and December. Three occurred at Vancouver Barracks, Wash., and 1 each at Fort Apache, Ariz.; Fort Wingate, N. Mex.; San Antonio, Tex.; Fort Reno, Okla.; Fort Gibson, Ind. T.; Fort Lewis, Colo.; Fort Niobrara, Nebr.; Fort Riley, Kans.; Camp Poplar River, Mont.; Fort Sully, S. Dak.; Fort Snelling, Minn.; Columbus Barracks, Ohio; and Fort Niagara, N. Y.

Three attempted suicides were reported, all enlisted men, 1 infantry, 1 cavalry, and 1 artillery. Alcoholism is reported as the cause in one, insanity in one; in the third the cause is not stated. The attempt was made by poison in one case, and by cutting the throat in the others. The nationalities were American 2 and Irish 1. The ages 22, 27, and 40. The cases occurred at Washington Barracks, D. C.; Fort Leavenworth, Kans.; and Presidio of San Francisco, Cal. The months were March, July, and August.

The total suicides and attempts at suicide numbered 19; 3 in the first year of service, 5 in the second, 4 in the third, 3 in the sixth, 2 in seventh, and 1 each in the tenth and twelfth. These suicides constituted 0.66 per thousand of the strength as compared with 0.77 in 1889, and with 0.76 as the annual average of the decade 1879–1888. The rate of suicide in the army of Austria-Hungary in 1889 was 1.51; of the Belgian army for the same year, 0.25; of the British army in 1888, 0.18; and of the Prussian army in 1887–'88, 0.53.

INFLUENCE OF SEASON ON THE PREVALENCE OF DISEASE.

The admission rate of the Army for all diseases and injuries for the year was 1,384.25 per thousand of strength, equal to an average monthly rate of 115.35. Viewing the admissions by months an unusual augmentation of the rate is found in January, 246.20, the result of the epidemic of influenza then prevailing. The rate fell in February to 111.29, and continued to fall until the minimum of 91.94 was reached in April, after which it gradually rose to a maximum of 125 in July, with a subsequent fall to 93.38 in November, and 93.91 in December. There was little variation in the monthly rates for alcoholism, venereal diseases, and injuries, so that when these are withdrawn from the rates for disease, in general, the curves of seasonal variation are but little changed from the positions already stated. Unusually high, 219.33, in January; falling suddenly in February, and gradually afterwards to a minimum of 61.88 in April, rising subsequently to a maximum of 88.11 in July, and then falling gradually to 64.63 and 63.45 in November and December.

The rate of non-effectiveness for all diseases followed somewhat similar curves, with the exception that its minimum was not reached until May, and its summer maximum was more protracted and fell more slowly in the later months of the year. The minimum rate for alcoholism, venereal diseases, and injuries was 12.22 in June, the maximum 14.16, in March. With so little variation in the rate from month to month it is evident that the withdrawal of these rates from those yielded by all diseases and injuries would not materially alter the seasonal curves of the latter. (See table X.*)

SUMMER ENCAMPMENTS.

Reports were received concerning the condition of certain regiments of the Pennsylvania, Iowa, and Michigan National Guard during their summer encampments.

Maj. Charles R. Greenleaf reported his attendance at the encampment of the Pennsylvania National Guard at Mount Gretna, Pa., July 19–25, 1890, where 8,429 troops were under canvas. The general police of camp was well conducted, but many of the interiors were untidy and several of the latrines neglected and offensive. The advantages of ditching their tents as a protection against rain had to be suggested. The food as a rule was restricted to the army ration, but in its preparation the plan adopted was one worthy of consideration by other troops than the Pennsylvania National Guard, as conducive not only to economy of the ration, but to excellent results in the preparation for the table. Each company hired one or more cooks known to the officers and men to be competent in their calling, and the advantages of this, according to Maj. Greenleaf, were apparent not only in the contentment of the men with their meals, but in their freedom from those disorders of the digestive system that are usually so frequent in such camps when the cooking is intrusted to incompetent men. The hospital corps lacked organization for field service, and the medical officers were equally lacking in the experience needful to perfect their organization. Advantage should have been taken of the aggregation of troops at Mount Gretna to establish a brigade or division hospital, such as would have been necessary in active warfare, but the short duration of the encampment did not permit this radical change from the regimental system, which was the only one with which these medical officers were familiar.

Maj. R. H. White reported his field service at Mount Gretna, Pa., with a command of 381 United States troops. A hospital was established July 15, and from that date to July 31 the average number sick daily was 9.8, or 2½ per cent of the strength. The daily mean temperature was 59.44° F., the minimum 46°, and the maximum 86°; rain fell on seven of the seventeen days. On July 21 the members of the hospital corps under Steward J. H. Grant gave an illustrative drill, which was attended by the medical officers and hospital corps of the division of National Guard, and next day these officers assembled at the hospital to examine its arrangements, furniture, and management.

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Maj. Hartsuff reported his services with troops of the Iowa National Guard at Cedar Rapids and Des Moines, Iowa. Headquarters, band and four companies of the Second United States Infantry encamped near the former city on August 3, where they were immediately joined by the First Iowa National Guard, clothed, armed, and equipped like United States infantry.

> Sick call was sounded regularly every day, but at first no attention was given to it; the sick went to the surgeon's tent at all hours. The companies had no company sick books, and the surgeon no morning-report book; indeed, neither of the doctors had ever seen or heard of a blank book, or a blank of any kind, pertaining to the medical department. A few medicines were purchased at a drug store for the occasion; no panniers of any kind and no instruments were provided. The surgeon had never made an inspection of the camp, and had never made a report of any kind, except at the breaking of camp, when a short report as to number of sick only was made to the brigade surgeon. No examination of any kind to enter the service, either of officers or men, has ever been required or made; and of the rank and file at least one-third are discharged, at their own request, each year. Judging from appearances, a majority of the enlisted men would be rejected on physical examination. The medical officers are appointed by the colonels, and, as the colonels are frequently changed (the First Regiment having had three within one year), the medical officers' tenure of office is very precarious.

The five days of camp duty required by law in each year having expired, the First Regiment broke camp on August 10, and next day the Fourth Regiment came by companies from various localities and occupied the recently vacated ground. Only one medical officer was present with this regiment and his only knowledge of his duties was to prescribe for any of the men whenever, during the twenty-four hours of each day, they came to him for treatment. At the close of the five days the Fourth Regiment broke into companies and started for home and the United States troops proceeded to Des Moines, where, on the 23d, they were joined by the Second Battalion of the Second United States Infantry and by three regiments of the Iowa National Guard. Heavy rains fell during the term of the encampment and interfered with the progress of military operations. With few exceptions the medical officers of the Iowa brigade had never been in camp before and their knowledge of their duties, as with the officers of the First and Fourth Regiments, appeared to be restricted to prescribing for such sick men as came to them and purchasing such medicines as might be required. The surgeon-general of the State and his regimental medical officers were greatly interested in the more extended views of the duties of an army medical officer presented by Maj. Hartsuff, and it is believed that good was effected by this contact of the Medical Department of the Army with that of the Iowa National Guard.

Capt. F. V. Walker accompanied the Second Battalion, Second United States Infantry, to Spring Lake, Iowa, and endeavored to give some idea of their duties to the medical officers of the Sixth Iowa encamped at that place. In an interesting report he has given, with considerable attention to details, his experiences with this regiment, which were essentially similar to those of Maj. Hartsuff with the First and Fourth regiments. Capt. Walker's programme was to read a paper on the organization of the Medical Department, U. S. Army, and the duties of its medical officers, to explain the use of the blank forms of the Department, to conduct a series of drills, and to institute a short course of lectures on first aid in emergencies, but bad weather and military duties prevented him from carrying out his plans. His paper is an excellent résumé of the subject, and was worthy of a larger audience. From Spring Lake the battalion proceeded to the brigade encampment at Des Moines, where Capt. Walker reported to Maj. Hartsuff. His report shows how much more earnestness is needful on the part of the medical officers of the Iowa National Guard before any results of value to the state or country can be expected. The character of his remarks will excuse a rather long citation:

> As early as possible Maj. Hartsuff, through the surgeon-general, F. H. Little, assembled the medical officers of the Iowa National Guard, and addressed them at length on the subject of their duties as medical officers. He impressed upon them the importance of a thorough acquaintance with these; he spoke of the necessity for efficient organization and methodical work; he showed them our blanks and forms of reports, and urged them to prepare and adopt something similar, but adapted to their needs; he called attention to the neglect, which was so apparent, of the proper policing of camps, and advised them to make regular inspections and report upon all violations of sanitary rules. In fact, he touched upon many important subjects, with the idea and hope of stimulating and exciting them to proper action.
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> They expressed the liveliest interest in Dr. Hartsuff's remarks, and apparently were very grateful to him for outlining their duties for them, and for the hints he gave.
>
> The doctor offered to have an exhibition drill of the company bearers in order that they might gain some idea as to its conduct. They accepted, and the next day I, under Dr. Hartsuff's orders, conducted a drill in their presence.
>
> The effect of the doctor's advice was not immediately apparent. I do not think the blanks were looked at a second time by any; nor do I think inspections were conducted any more diligently. The surgeon-general returned to his home, armed with a set of the blanks and forms, and notes of the books, etc., he was advised to make requisition for. He expressed the determination to make a study of the subject with the view to organize a corps and to establish some system. He is a young man and apparently an energetic one, and the chances are that before the next encampment he will have accomplished this, and be able then to test the practicability of his scheme.
>
> I could not help doubting the earnestness of the medical gentlemen of the national guard. It appeared to me that they regarded the annual encampment in the light of a picnic—an "outing," which offers them relaxation from work, and which should be spent in frolic and festivity. Indeed, I do not think this idea, this feeling, is confined to the medical officers, but is shared by those of the line, in fact, by almost every man in uniform. There is everything to foster such a feeling, and it will exist so long as these encampments are conducted as they now are. Certainly this is not the idea of the State. She does not intend that the annual meetings of her soldiery should be for fun or frolic, she expects a substantial return for her money, but she does not get it. The men arrive on the ground and enter tents already pitched for them; they drill a little; they do a little guard duty, but they are on dress parade most of the time, and are fed by meals prepared by hired help, and cooked on modern ranges or stoves, and finally march off the ground, leaving the tents still standing, and return to their firesides with wonderful tales of how they "roughed" it in camp. What have they learned? How much could have been taught them by other methods in the time they have wasted? These are questions which are beyond my province to discuss.

From this report it must be inferred that everything has yet to be done toward effecting an efficient organization and establishing system in the medical department of the Iowa National Guard. In a letter I received recently from the adjutant-general of Iowa, he said that it was contemplated to establish a hospital corps in the medical department of the State service "prescribing thorough and systematic instruction in that duty." It appears to me that it would be wiser first to organize a medical department. At present the organization consists of a surgeon-general, who receives his appointment from the governor; of regimental surgeons and assistant surgeons who are practically appointed by the colonels of the regiments, and regimental hospital stewards. The power of the surgeon-general is vague and undefined. He receives no reports (or did not before this season) from his subordinates, who, indeed, rather recognize their colonels as their chiefs than him. In my opinion this regimental organization should be discontinued and a State medical department organized, with the surgeon-general at its head, who shall have charge of the administrative duties and who shall not be removed except for causes outside of politics. Then there should be a corps of medical men, surgeons and assistant surgeons, who should be selected only after a sufficient test of their abilities (and then it would soon become a desirable distinction to be enrolled in the State service). And afterward a hospital corps could be organized. The medical department of the State forces should be as distinct and separate as is the Medical Department of the U. S. Army.

I must make one more suggestion before closing this report. If it is contemplated that in future encampments of the United States troops with the National Guard the medical officers shall conduct litter and bearer drill, I think it would be wise to send along at least enough men of the Hospital Corps to form two sets of fours. The time of the men of the companies is so taken up by the various exercises that they are seldom available when the surgeon would like to have them. Then, too, members of the Hospital Corps are naturally more efficient in these particular drills as they take decidedly more interest in them, than the company bearers. In Des Moines I found that the men had not been drilled at all according to the system lately recommended by the Leavenworth Board, and even in the old method some of them were newly appointed, and consequently unfamiliar with the drill.

Maj. J. V. Lauderdale accompanied headquarters, band, and four companies Nineteenth United States Infantry from Fort Wayne to Gognac Lake, Michigan, where the Michigan National Guard was found encamped.

During the hours that were devoted to drill by the regulars the time was occupied by me with drilling the men of the corps in the system contained in the report of the Board convened at Fort Leavenworth June, 1890. The system of litter drill followed by the State troops was that contained in the manual edited by Surg. Smart. I spent some time in calling their attention to modifications of the above drill given in the report above referred to.

I found them provided with a regulation ambulance issued to the governor from the United States medical purveying depot, and they were making good and legitimate use of it in all their field exercises.

There seemed to be an earnest desire on the part of the medical officers of the State troops to carry out all the exercises pertaining to their department to the minutest detail in accordance with Army Regulations.

It may be here stated that the Hospital Corps has now been provided with a drill manual in which is embodied the matured views and experience of the medical officers of the Army. When the corps was organized a provisional manual was issued with full permission to medical officers to deviate from its teachings in any way that would tend to the welfare of the patient. Later a board of experienced officers was convened at Fort Leavenworth, Kans., to elaborate from the mass of criticism on the provisional manual a drill system to take its place. This board made haste slowly. It sent a copy of the report which it purposed rendering to every medical officer of the Army with a request that the system be tried and freely criticized. Many reports were received during the year and the *Drill Manual for the Hospital Corps*, as now authoritatively issued, is the original report of the board modified by a careful consideration of the suggestions of the most active minds of the medical department.

OPERATIONS AGAINST THE SIOUX INDIANS.

On November 20, 1890, the conditions among the Sioux Indians at Pine Ridge and Rosebud Agencies, S. Dak., were such that the presence of a force of United States troops became imperative. To meet the possibilities of the occasion, Medical Director Bache, Department of the Platte, shipped to Pine Ridge the tentage and materials for a hospital of 25 beds; but as the situation at the Rosebud Agency became pacific, the surgical preparations were concentrated at Pine Ridge, where a command of 77 officers and 1,300 enlisted men had been aggregated. The following citations are from Dr. Bache's report:

The medical organization consisted of a division field hospital, Maj. A. Hartsuff, surgeon in charge; Capt C. B. Ewing, assistant surgeon, 2 non-commissioned officers, and 10 privates of the Hospital Corps. The tentage had been increased with a final capacity for 60 patients, and the equipment was considered fairly complete.

With the two battalions of the Seventh Cavalry were 2 medical officers, 1 hospital steward, and 4 privates of the Hospital Corps, 2 ambulances; Light Battery E was attached for medical service. With battalion of the Ninth Cavalry, 1 medical officer, 1 acting steward, and 5 privates, 1 ambulance, the Indian scouts were attached for medical service.

The force operating to the north and west on the line of the Cheyenne River and near Oelrichs, S. Dak., consisted of the Sixth Cavalry, two troops of the Eighth Cavalry, a company of Cheyenne scouts, and a battalion of cavalry (four troops) from Fort Leavenworth. This line was under the direction of the division commander, then at Rapid City, S. Dak, and its medical supervision rested with the Department of Dakota. The First Infantry, from California, lay at Fort Niobrara, and the garrisons at Forts D. A. Russell and Douglas, under constant preliminary orders, had not been called. With the First Infantry were 1 medical officer, 1 hospital steward, and 3 privates of the Hospital Corps; no ambulance. The medical effective force from Forts D. A. Russell and Douglas had been fixed by instructions December 2—1 medical officer, 1 non-commissioned officer, and 5 privates from each—and 1 ambulance. Provision was to be made for treating in the regimental field hospitals 3 per cent of the command.

During the month of December, while preparations for an active campaign were in progress, it looked as if an amicable settlement would be ultimately effected; but on the morning of the 29th an unexpected and severe engagement took place between Colonel Forsyth's command, consisting of eight troops of the Seventh Cavalry, Light Battery E, First Artillery, and Company A, Indian scouts, and a band of 400 hostiles under the Sioux Chief, Big Foot, at Wounded Knee Creek, 16 miles from Pine Ridge. One United States officer and 29 men were killed and 2 officers and 29 men wounded. The latter, with 28 wounded Indians, chiefly women and children, reached the agency at 9:30 p. m., where they were at once provided for. The division field hospital received the officers, and men, while the Indians were treated in tents and in a small church tendered for hospital use by the Protestant Episcopal mission. A skirmish that night and another the following day added 1 officer and 7 enlisted men to the inmates of the hospital.

The anxiety of the medical department at this time lay not in caring for the wounded already on hand, but in being prepared for what seemed to be imminent, a protracted campaign against 4,000 Indians, who had an effective war force of 600 to 800 men. To meet the possibilities of the situation the medical director telegraphed for more medical officers, members of the Hospital Corps, and medical supplies, all of which were promptly furnished by this office. The force thus placed at his disposal enabled him to provide an effective service with each of the military commands, including his field hospital, and to organize a company of the Hospital Corps, consisting of 1 medical officer, 2 non-commissioned officers, and 19 privates, from which could be drawn a working force for any emergency that might occur.

As soon as all operative proceedings had been finished in the hospital and the wounded were in condition to bear transportation, it was determined to relieve the field hospital by sending them for further treatment to their respective stations. Accordingly, on January 4, 2 men were sent to Fort Robinson, Nebr.; 6 to Fort Omaha, Nebr.; and 21 to Fort Riley, Kans. The transportation was by ambulance, 26 miles, to Rushville, and thence to destination by tourist sleeper on the railroad.

The occupancy of the field hospital on the morning of January 4 was 46, on the 5th, 18; and it received no more casualties after this. In addition to the resources already enumerated several large dormitories of the Ogalalla school at the agency were immediately available and supplied with beds and bedding; and an offer was made on the part of the executive board of the Soldiers' Home at Hot Springs, S. Dak., of two-thirds of the then new and completely equipped building, the estimated capacity of which available portion was 200 beds. The estimate of the medical director was that there were under immediate control at the agency 150 beds, at Forts Robinson and Niobrara 40 each, and the contingent of 200 at the Hot Springs, should the campaign be severe and protracted.

There was, however, no call for these extra resources, for the hostile Indians, after a period of doubt and hesitation, came into camp and surrendered their arms; after which the duty of the medical department was to return without unnecessary delay to its ante-bellum stations. Commenting on the health of the command, Lieutenant-Colonel Bache reports:

> The field hospital of the Seventh Cavalry, under Capt. John Van R. Hoff, assistant surgeon, was a type of satisfactory method and completeness, and an example to which I feel safe in referring other medical officers for study and visible proof of efficiency.

The wounds of the Indians were mostly severe and difficult to heal, as all capital operations were refused, notwithstanding repeated explanation and urging through missionaries, interpreters, and friends. The simplest handling was at first resisted or met with suspicion. In cases of extensive injury to the large bones or joints septic fever came sooner or later, and finally death.

Colonel Bache commends for their efficiency the staff of the field hospital, the two medical officers in charge of the Indian wounded, and those on duty with the Seventh and Ninth Cavalry.

> The non-commissioned officers and privates of the Hospital Corps were an efficient and valuable body of men. The officers to whom they were assigned for duty reported them as well trained and untiring. They were hastily gathered together from many widely separated posts and without time to fuse together in their new positions, making their readiness for emergencies more conspicuous. I can testify to their faithful service in nursing the Indian wounded under every disadvantage, and the testimony of Captain Hoff as to the conduct of his men under a hot fire is such as to satisfy those to whom the discipline, courage, and training of the corps is a fixed purpose worthy of every encouragement.

The testimony of Captain Hoff, to which Colonel Bache refers, is as follows:

> I have heretofore had the honor to submit many reports and suggestions regarding the Hospital Corps under various conditions of service, in post, camp, and field, but it was only recently I had an opportunity to see its working under the crucial test of battle. It is but faint praise to say that it more than met my expectations. My detachment was absurdly small in proportion to the amount of work required in the engagements at Wounded Knee and White Clay. In the first named, Hospital Steward Pollak, Privates Costner and Girdwood, Hospital Corps (the two ambulances, unfortunately, for want of my own men were driven by citizens), constituted the detachment. Steward Pollak was killed early in the fight on December 29 (one ambulance driver ran away with his ambulance, but ultimately returned and thereafter both did fair work), leaving Privates Costner and Girdwood alone to meet their part of the requirements of a bloody battle. Their work was skillfully, tenderly, courageously done, beyond all praise and worthy of official recognition. When the stress of battle was passed their efforts were supplemented by the company bearers whose training made this assistance of great value. This is borne out by the statements of many line officers, and it may be safely said that hereafter, in this command at least, there will be no skepticism as to the value of "first aid" and bearer instruction.
>
> The next day, in the White Clay affair, while I was attending to the wounded on the skirmish line, the position of the ambulances was enfiladed by a sharp fire. One of the ambulances was partially wrecked by being overrun by the led horses, and both were incontinently abandoned by their citizen drivers. An officer (Lieutenant Mann) having been reported wounded on the skirmish line, Private Costner, of the hospital corps, though no driver, jumped upon the box of the remaining ambulance and drove beyond the withdrawing skirmish line to the wounded officer, who was picked up and carried to a place of safety. Two of the ambulance mules were

wounded. Private Girdwood accompanied the ambulance and assisted in the loading. On the same day Girdwood (mounted) nonchalantly brought my horse to me through a sharp fire as the line was about to fall back. I mention these circumstances to show the quality of courage which actuated these men, courage not born of strife, but of a high sense of duty, inherent indeed, but developed by the system of military discipline obtaining in my detachment, without which I do not believe such results could have been reached.

Col. Bache refers to the numerical inadequacy of the Hospital Corps for field service, when based upon an allowance of so many men to each post.

The Seventh Regiment of United States Cavalry, 8 troops, numbering over 500 men, and maneuvered as 2 battalions, entered the field with 2 medical officers, 1 hospital steward, and 4 privates of the Hospital Corps. It carried 2 ambulances, for which civilian teamsters were supplied. It left its camp at Pine Ridge Agency as battalions December 26 and December 28, uniting at Wounded Knee, 16 miles distant, on the evening of the latter day; both of its medical officers were present, the steward, and 2 privates, both ambulances. The remaining 2 privates were left in camp in charge of the hospital containing some sick and the property. This regiment was on the morning of the 29th suddenly involved in a severe engagement with the Indians, losing 30 killed, and having on its hands 36 of its own wounded, besides a burden of some 30 severely wounded Indians, chiefly women and children. The hospital steward was killed early in the action, and the hired drivers, although good men, were frightened almost to the point of abandoning their teams and leaving the field. The primary work with this mass of wounded fell, therefore, upon the 2 medical officers and 2 privates of the corps, reënforced later by the services of the company bearers, when these could be spared from the fighting line. That the work was done at all, that it was well done, was due simply to the ability of the chief medical officer, Capt. Hoff, and to the instinct of devotion to duty to which his whole training and example had compelled his men. Had that regiment been operating at a distance from support or organized assistance, instead of having a receiving hospital within easy reach, it is not hard to cast the sum of its suffering. I cite this regiment because the stress of fight fell upon it, and because its medical provision and organization was a model of thoughtful work; and yet, through the vice of our present system of controlling post influence, it failed of three-fifths of its medical effective, and had its hospital detachment been on the boxes of its ambulances it would have been left with no force whatever.

To supply this command in southern Dakota men had to be detached from twenty different posts, from Fort Canby, Wash., to Rhode Island, and it is readily seen that if instead of having to meet the needs of a field command such as that at Pine Ridge Agency the Medical Department had been called upon to meet those of a command four or five times as large it would have failed assuredly. To meet emergencies of this character the department should have a reserve force, such as Col. Bache formed when he organized his Hospital Corps company. These reserve companies should be stationed at some of the largest posts, and each should be practically a school in which hospital corps drill, nursing, minor surgery, and first aid in emergencies should be taught. Recruits should go to these companies for instruction, and the needs of the Army for sanitary soldiers should be supplied from them. An effort is now being made to carry these views into practical effect.

The summer camps and field maneuvers of the last year or two, and notably the campaign against the discontented Sioux Indians, showed most distinctly the lack of provision in our Army for mounting those members of the Hospital Corps that are required by law to be mounted. At all posts and in all places where the law contemplates that any member or the whole of a detachment should be mounted, the necessary horses should always be there, as much the responsibility of the senior medical officer as the horses of the cavalry troop are the care of the troop commander. They should be stabled and cared for by the men of the detachment, and exercised and trained under the direction of the medical officer. It will be a certain increase of expense and an extension of work, but without this absolute provision and control the Medical Department can never be able to give thorough satisfaction in the field. Col. Bache's remarks on this subject fully sustain this statement:

> I have already briefly stated in narrative my efforts to procure mounts for such members of the hospital corps as are by regulation and antecedent military propriety required to be mounted. These efforts were fruitless and mortifying. It was not impossible to mount scouts, messengers, artists, and civil topographers; to draw superfluous tentage and baggage beyond all allowance, but it was impossible to divert the animals employed in these ways to a logical, military, and exacting purpose. The place of the ambulance is with the marching column, whether of foot troops or mounted. Wherever wheels can keep pace with the command, the ambulance should go; but the ambulance should not serve as a transport for the detachment of the hospital corps. You need it light and unincumbered for ready following. You need to spare every pound of draft. The spectacle of an ambulance making 45 miles in nine hours with cavalry, and loaded, as it were, to the water line, with a hospital detachment, is not exalting, and it is not military. Chance mounts are of but scanty use, they are uncertain; for every man dismounted there may be a horse killed or disabled. Your men are not used to their horses, unused to the saddle, and their security and readiness are by so much diminished. To have your mounted steward and orderly or whole mounted detachment efficient, you should have the men familiar with their animals, accustomed to their care, intelligent of their needs and capacity. In other words, mounted detachments should always be mounted, for peace and therefore for war; in garrison and therefore for the field. Here, as in other ways, our weights and measures for post administration have scaled efficiency of equipment to the point of vanishing. Compromises have been suggested more or less effective. To mount the detachment, or so many as can be mounted, upon the draft animals of the ambulance, as the cannoneers of the horse artillery are mounted. The objection to this is, first, that in garrison they are not under your absolute control, but may be, and probably are, used for various purposes; your men are therefore unfamiliar with their individual mounts and the animals are not fitted for the saddle; second, that it does not provide for your steward, for your orderly, nor for any separate flexibility; and third, that if wheels have to be left and only packs taken, while the general transportation still follows slowly, your men are dismounted at a critical time or left behind.
>
> To hire mounts is another expedient, unwise, expensive, and frequently prohibitory. The cost is sometimes excessive, from $2 to $3 per day for each animal, the minimum being 40 cents per day. Again, your men have no intelligent knowledge of their animals, and with but temporary charge there would be but limited interest, care, and acquired training.
>
> If the sphere of the hospital detachment were limited to the actual ground in which the ambulance could operate, that is, if it were like a hook-and-ladder company, then to seat the men of the one as we seat men of the other, on their apparatus, would be so far logical and operative; but if you still require the fire to be suppressed and lives saved when you leave both transport and apparatus in the rear, it is always absurd, and will sometime be critically disastrous.

SURGICAL OPERATIONS.

During the year the medical department of the Army reported 204 surgical operations, 71 of which were necessitated by injuries and 133 by disease. The number, character, and results of these are shown in the following statement:

Nature of operation.	Disease or injury.	Total.	Recovery.	Died.	Remarks.
Removal of tumors		18			
Enucleation	Sebaceous, 7; encysted, 2; fibrous, 3; lipoma, 5; papilloma, 1.	18	18	......	Face, 2; neck, 8; back, 2; chest, 1; abdomen, 1; hand, 4.
Removal of foreign bodies		4			
Bullets and shot	Shot wounds	4	4	......	Foot, 1; buttock, 1; chest, 1; arm, 1.
Opening of abscesses		3			
Incision	Submaxillary, 1; cervical, 1; perityphlitic, 1.	3	3	......	Face, 1; back, 1; abdomen, 1.

Number, character, and results of surgical operations—Continued.

Nature of operation.	Disease or injury.	Total.	Recovery.	Died.	Remarks.
Operations on the eye		**3**			
For pterygium		1	1		Extirpation.
Cataract		1	1		
Enucleation	Gonorrhœa ophthalmia.	1	1		
Operations on the ear		**1**			
Paracentesis	Inflammation	1	1		Middle ear.
Operations on the nose		**2**			
Snoring	Nasal polypus, 1; nasal catarrh, 1.	2	2		
Operations on the mouth		**1**			
Excision	Tonsillitis	1	1		
Operations on arteries		**2**			
Ligation	Puncture, 1	1	1		Radial, 1; ulnar, 1.
	Laceration, 1	1	1		
Operations on veins		**1**			
For varicocele		1	1		
Operations on nerves		**2**			
Excision	Neuralgia	2	2		Neuroma.
Operations on the respiratory organs.		**4**			
Tracheotomy	Diphtheria, 1; asphyxia, 1.	2	1	1	
Paracentesis	Pleurisy	2	2		
Operations on the digestive organs.		**32**			
Laparotomy		1	1		
For hernia		2	2		
For fistula in ano		10	10		Incision, 8; ligation, 2.
Hemorrhoids		18	18		Ligation, 13; excision, 1; cautery, 3; dilatation, 1.
Paracentesis abdominis		1	1		
Operations on the urinary organs.		**16**			
For stricture, urethral dilatation.	Gonorrhœal	1	1		
Internal urethrotomy	Gonorrhœa	15	15		
Operations on the generative organs.		**15**			
For phimosis	Gonorrhœal, 2; syphilitic, 3; congenital, 2; not stated, 3.	10			Circumcision, 10.
Balanitis	Gonorrhœal	1	1		Circumcision.
Hydrocele		3	3		Tapping, 2; incision, 1.
Testicle	Orchitis	1	1		Castration.
Operations on bones		**6**			
Removal of portions	Fracture, 1; disease 1	2	2		Skull, 1; finger, 1.
Trephining	Fracture	2	1	1	Parietal.
Excision, elbow	Shot wound	1	1		Primary.
Suture	United fracture	1	1		Tibia.
Operations on joints		**24**			
Reduction of dislocation		24	24		Shoulder, 15; elbow, 7; wrist, 1; knee, 1.
Operations on limbs		**35**			
Amputation for injury		34			
Arm	Shot wound	1		[a]1	Intermediary.
Forearm	do	1	1		Primary.
Across hand	Fracture	1	1		Do.
Fingers	Shot, 8; injury, 12; frostbite, 2.	22	22		Primary, 18; intermediary, 2; secondary, 2.
Thigh	Fracture	2		[b]1	Primary.
Leg	Shot, 1; fracture, 3	4	4		Primary, 1; intermediary, 1; secondary, 1.
Ankle joint	Frostbite	1	1		Secondary.
Toes	Fracture, 1; frostbite, 1.	2	2		Primary, 1; intermediary, 1.
Amputation for disease		1			
Part of hand	Ulcer	1	1		
Operations on muscles, tendons, and fasciæ.		**3**			
For hammer toe		1	1		
Scraping muscles	Sinuses	1		[c]1	
Excision ganglion		1			
Operations on skin, etc		**13**			
Ingrowing nails		11	11		
Skin grafting	Chronic ulcer	1	1		Thigh.
Cicatrix	Scrofulous ulcer	1	1		Excision.
Aggregate		201			

[a] Death from pyæmia. [b] Double amputation. [c] Death from asthma.

VACCINATIONS.

The total number of primary vaccinations reported was 1,224, of which 729, or 59.6 per cent, were successful; 556, with 374 successful, at the recruiting depots; and 668, with 355 successes, in the Army at large.

The revaccinations numbered 6,230. Of these 2,518 were at the depots and 3,712 in the Army at large; 875 of the former and 1,177 of the latter, or a total of 32.9 per cent, were successful.

Bovine virus was used in 1,105 primary cases, 681, or 61.6 per cent, successful; and in 5,396 revaccinations, with 1,854, or 34.4 per cent, satisfactory.

Humanized virus was used in 119 primary cases, 48, or 40.3 per cent, successful; and in 834 revaccinations, with 198 cases, or 23.8 per cent, satisfactory.

CIVILIANS ATTACHED TO OR WITH THE ARMY.

The civilian attachés of the Army comprise the families of officers and enlisted men, servants, employés of the various departments, together with their families, and all persons not included in the personnel of the Army who are allowed to reside at military stations or accompany military commands. As shown by the consolidated reports of the departments, with a mean strength of 24,234 officers and enlisted men, there were constantly present during the year an average of 14,450 civilians, of whom 2,831 were adult males, 5,456 adult females, and 6,163 children.

The admissions to sick report for the year numbered, for the adult males, 2,637; deaths, 38; for the adult females, 7,121; deaths, 49; for the children, 6,979; deaths, 141, or an aggregate of 16,737 admissions and 228 deaths. The admission rates per 1,000 of strength were 931 for adult males, 1,305 for adult females, and 1,132 for children, or an average of 1,158; the death rate for adult males was 13, for adult females 9, for children 23, average 16. For the previous year the admission rate for adult males was 808, adult females 1,385, children 1,278, average 1,223; and the death rates 6, 8, and 20, average 13.

The deaths and their causes are here tabulated:

Diseases.	Adult males.	Adult females.	Children.	Total.
Specific febrile and infectious diseases	1	10	45	56
Constitutional		5	14	19
Developmental	3	2	5	10
Nervous	3	2	11	16
Respiratory	16	19	19	54
Circulatory	3	2	3	8
Digestive	1	1	31	33
Peritonitis		2	1	3
Urinary	2			2
Parturition and results		2		2
Total from disease	29	45	129	203
Total from injuries	8	3	12	23
Unknown	1	1		2
Total from all causes	38	49	141	228

MARRIAGES AND BIRTHS.

On the consolidated reports there were noted during the year 52 marriages, of which 10 were of officers, 40 of enlisted men, and 2 of civilian attachés.

There were recorded also 488 births: male, 238; female, 250. Eighty-six were children of officers, 342 of enlisted men, and 60 of civilian employés. Besides these, 26 births were reported among the Indian prisoners at Mount Vernon Barracks—9 males and 17 females.

List of special reports received during the calendar year.

MEDICAL REPORTS.

Name.	Rank.	Report.
Appel, A. H	Acting assistant surgeon	Acute apendicitis with perforation of vermiform appendix; autopsy.
		Epidemic influenza at Fort D. A. Russell, Wyo.
Banister, W. B	Capt. and asst. surgeon	Epidemic influenza at Fort Grant, Ariz.
Brickett, G. E	Acting assistant surgeon	Epidemic influenza at Kennebec Arsenal, Me.
Bowles, S. W	Acting assistant surgeon	Case of nervous exhaustion.
Bradley, A. E	Lieut. and asst. surgeon	Death from phthisis.
Coe, A. H	Acting assistant surgeon	Epidemic influenza at Fort Missoula, Mont. Case of acute lobar pneumonia, treatment with calomel with remarkable result.
Cowdrey, S. G	Capt. and asst. surgeon	Case of smallpox. Recovery.
Corson, J. K	Major and surgeon	Otitis media; death.
		Epidemic influenza at Fort Sherman, Idaho.
Comegys, E. T	Capt. and asst. surgeon	Epidemic influenza at Fort Bayard, N. Mex.
Craig, G. G	Acting assistant surgeon	Autopsy; death from acute enteritis.
Ebert, R. G	Capt. and asst. surgeon	Operations of hospital corps in summer camp.
		Suggestions relative to the contents of the medical panniers.
Frick, A. P	Acting assistant surgeon	Vaccinations at Fort Selden, N. Mex.
		Epidemic influenza at Fort Selden, N. Mex.
Ferguson, J. B	Acting assistant surgeon	Thermograph in a case of remittent fever.
Forwood, W. H	Major and surgeon	Tertiary syphilis.
Fisher, W. W. R	Capt. and asst. surgeon	Epidemic of acute dysentery in camp on Tongue River, Mont.; suggests tents for sick be of some dark color.
		Pulmonary oedema successfully treated with fluid extract of jaborandi.
Gardner, E. F	Capt. and asst. surgeon	Cancer of the omentum.
Gibson, J. R	Major and surgeon	Death from phthisis.
		Typhoid fever with catarrhal pneumonia; death.
		Chronic inflammation of the bladder.
Girard, A. C	Major and surgeon	Aneurism of aorta.
Gorgas, W. C	Capt. and asst. surgeon	Rapid delivery necessitated by puerperal convulsions.
Gray, W. W	Capt. and asst. surgeon	Croupous pneumonia involving both lungs; death.
Harvey, P. F	Major and surgeon	Scarlet fever; remarkable susceptibility to the infection.
Haskins, H. S	Acting asst. surgeon	Death from meningeal hemorrhage.
Heizmann, C. L	Major and surgeon	Fever cases at Fort Sam Houston, Tex., 1889 and 1890.
		Clinical account, causes and treatment.
Horton, S. M	Major and surgeon	Autopsy, diffused aneurism descending aorta.
Holland, F. H	Acting assistant surgeon	Acute articular rheumatism affecting all the joints of arms and legs.
Heyl, A. B	Lieut. and asst. surgeon	Chronic endocarditis.
Jarvis, N. S	Lieut. and asst. surgeon	Miscarriage with difficult removal of placenta and tardy contraction of womb.
Kneedler, W. L	Capt. and asst. surgeon	Serous apoplexy.
		Epidemic of diphtheria at West Point N. Y.
Koerper, E. A	Major and surgeon	Influenza and capillary bronchitis; death.
Lauderdale, J. V	Major and surgeon	Pneumonia probably following an injury of the chest; recovery.
La Garde, L. A	Capt. and asst. surgeon	Typhoid fever at Fort Assinniboine, Mont., 1889.
		Appendicitis; recovery.
		Stricture, urethrotomy; recovery. Pelvic cellulitis; loparotomy; recovery.
Mason, C. F	Lieut. and asst. surgeon	Epidemic influenza at Fort Washakie, Wyo., 44 thermographs.
		Case of hemorrhage of the stomach with hæmaturia; recovery.
		Acute dysentery; recovery.
		Results obtained from the Erlich urinary test.
McCreery, Geo	Capt. and asst. surgeon	Thermograph in typhoid fever.
McElderry, H	Major and surgeon	Scarlet fever at West Point, N. Y.
McClellan, E	do	Death from chronic gastric catarrh.
Merrill, J. C	Capt. and asst. surgeon	Typhoid fever.
Morris, E. R	do	Epidemic influenza at Fort Shaw, Mont.
Moseley, E. B	do	Fevers at Fort Clark, Tex., 1889 and 1890.
		Remittent pernicious fever; death.
		Screw worms in the nose and head; death. Autopsy.
Norris, B	Colonel and surgeon	Pneumonia right lung; recovery.

List of special reports received during the calendar year—Continued.

MEDICAL REPORTS—Continued.

Name.	Rank.	Report.
O'Reilly, R. M	Major and surgeon	Aneurism of the thoracic aorta.
Perley, H. O	Capt. and asst. surgeon	Acute pleurisy, aspiration; recovery.
Pope, B. F	Major and surgeon	Typhoid fever and water supply at Whipple Barracks, Ariz.
Rafferty, O	Lieut. and asst. surgeon	Typhoid fever at Fort Sam Houston, Tex.
Robinson, S. Q	Capt. and asst. surgeon	Four cases of continued fever; quinine and Warburg's tincture without beneficial result. Thermographs.
Suter, W. N	Lieut. and asst. surgeon	Appendicitis; recovery.
Taylor, B. D	Capt. and asst. surgeon	Epidemic influenza at Fort Sill, Okl.
Tilton, H. R	Major and surgeon	Two reports on the epidemic of influenza at West Point, N. Y.
		Tænia saginata; treatment with extract of male fern.
Turrill, H. S	Capt. and asst. surgeon	Epidemic influenza at Fort Spokane, Wash.
Vickery, R. S	Major and surgeon	Aneurism of the aorta.
		Idiopathic tetany; sudden death.
		Pulmonary tuberculosis; death. Thermograph.
Waters, W. E	do	Acute pharyngitis, metastatic inflammation of both testicles; recovery.
		Autopsy, thorax and abdominal organs.
		Case of insanity.
Weirick, R. S	Acting assistant surgeon	Autopsy in a case of sudden death; cause not determined.
White, R. H	Major and surgeon	Acute dysentery. Thermograph.
		Thermograph in typhoid and remittent fever at Fort Myer, Va.
Wilcox, T. E	Capt. and asst. surgeon	Fevers at Camp George Crook, Nebr. Quinine without apparent influence on course of disease. Thermographs.
		Typhoid fever; recovery. Thermograph.
Winne, C. K	do	Continued fever. Thermograph.
		Thermograph in case of pneumonia.
Wolverton, W. D	Major and surgeon	Aneurism of the aorta.
Wood, M. W	Capt. and asst. surgeon	Influenza at Fort Randall, S. Dak.
		Rattlesnake poisoning and its antidote.
Woodruff, C. E	do	Vaccinations at Fort Gaston, Cal.
		Diseases of Northern California Indians.

SURGICAL REPORTS.

Name.	Rank.	Report.
Banister, J. M	Capt. and asst. surgeon	Double rupture of the choroid.
		Melanotic sarcoma of the choroid.
		Case of drowning.
Corbusier, W. H	do	Stricture of urethra, external perineal urethrotomy; death.
DeLoffre, A. A	do	Traumatic tetanus, chloral; recovery.
		Opium poisoning; recovery.
		Tubercular orchitis; castration.
Dewey, F. S	Acting assistant surgeon	Shot wound, brain; fatal.
Fisher, W. W. R	Capt. and asst. surgeon	Empyema, incision, drainage; recovery.
France, J. M	Acting assistant surgeon	Gunshot wound, thigh; recovery.
Frick, E. B	Lieut. and asst. surgeon	Rattlesnake bite, injection permanganate of potash; tourniquet; recovery.
Gorgas, W. C	Capt. and asst. surgeon	Diphtheria, tracheotomy; death.
		Fracture of skull; fatal.
Gandy, C. W	do	Fracture of cervical vertebra; autopsy.
Glennan, J. D	Lieut. and asst. surgeon	Fracture of skull and spine.
Girard, J. B	Major and surgeon	Gunshot wound of elbow.
Gardner, W. H	do	Severe contused wound of scalp and results.
Harris, H. S. T	Capt. and asst. surgeon	Fracture of skull, trephining; death.
Hoff, J. Van R	do	Punctured wound perforating spleen; autopsy.
Johnson, R. W	do	Rupture of small intestine; autopsy.
La Garde, L. A	do	Abscess of liver, incision; recovery. Paranephritis, incision; recovery. Astigmatism.
Lippincott, H	Major and surgeon	Enlargement of inguinal glands.
Kimball, J. P	do	Shot wound of hand, amputation; recovery.
McCaw, W. D	Capt. and asst. surgeon	Death from hydrophobia.
Moseley, E. B	do	Death from lightning stroke.
Merrill, J. C	do	Fracture of scapula.
Poindexter, J. D	Lieut. and asst. surgeon	Gunshot wound of leg.
Shannon, W. C	Capt. and asst. surgeon	Death from poisoning by clove tea used as an abortifacient; autopsy.
		Suicide by laudanum.
		Shot wound of thigh.
		Rattlesnake bite, hypodermic spirits of ammon-recovery.

List of special reports received during the calendar year—Continued.

SURGICAL REPORTS—Continued.

Name.	Rank.	Report.
Snyder, H. D	Lieut. and asst. surgeon	Suicide, gunshot wound of skull; autopsy.
Sanderson, J. L	Acting assistant surgeon	Gunshot wound of leg.
Sewall, C. A	do	Fracture of ribs.
Suter, W. N	Lieut. and asst. surgeon	Autopsy in a case of death from rupture of pulmonary blood vessels following injury.
Taylor, B. D	Capt. and asst. surgeon	Death from opium poisoning.
		Stab wound of chest; autopsy.
Weirick, S. T	Acting assistant surgeon	Shot wound of abdomen; death.
Wilcox, C	Lieut. and asst. surgeon	Rapid recovery from effect of ether.
Wood, M. W	Capt. and asst. surgeon	Injuries to spine.

SANITARY CONDITION OF THE ARMY.

QUARTERS.

The quarters provided by the United States Government for its troops have been improved recently in two ways, by building and repair and by the abandonment of old and dilapidated structures or unhealthy localities. During the calendar year the garrisons were withdrawn from the following stations: Fort Klamath, Oregon, Fort Maginnis, Mont., in July; Fort Crawford, Colo., Fort Mojave, Ariz., and Fort Gibson, Ind. T., in September; Little Rock Barracks, Ark., Fort Pierre, Dak., Fort Elliott, Tex., Fort Bridger, Wyo., Fort Selden, N. Mex., and Fort McDowell, Ariz., in October; Fort Totten, Dak., and Fort Verde, Ariz., in December. At most of these the quarters were overcrowded and poorly ventilated, so that their abandonment has been a clear sanitary gain, and will probably show its influence in diminished sick rates hereafter.

From many posts the condition of the men's quarters is reported as satisfactory; and sanitary progress is manifested by such reports as that from Fort Hamilton, N. Y., which announces that in October the damp, moldy, and unventilated casemates, which for years past have been nurseries of consumption and rheumatism, had been vacated by all except the band, prisoners, and guard, and the troops moved into commodious barracks built on the open plain.

Nevertheless the reports for the year are by no means all satisfactory.

Overcrowding and its associated defective ventilation are the sanitary faults that are most frequently noted; but bad construction, inefficient means of heating, undrained and unventilated sites, with rotting woodwork, leaky roofs and general dilapidation are occasionally recorded, showing that although much has been accomplished of late years on behalf of the comfort and health of the soldier and the attachès of our military posts, we are far from being able to rest satisfied with present conditions. Dilapidation and insanitary construction are reported from Fort Union, N. Mex., Fort Omaha, Nebr., Fort Barrancas, Fla., Camp at Eagle Pass, Tex., and Boisé Barracks, Idaho, as follows:

Fort Union, N. Mex.—Quarters, dilapidated and leaky.

Fort Omaha, Nebr.—Dilapidated condition of nearly all the buildings at the post; same as heretofore. As the post will probably be occupied for years, all the quarters should be repaired.

Fort Barrancas, Fla.—The barrack building was excellently adapted for the health and comfort of the men at the time it was built, though it needs urinals and latrines on the second and third stories. An elevator would be a great addition.

The officers' quarters are old, dilapidated frame structures, poorly adapted to comfort or convenience. The natural advantages of location and surroundings are so great that a comparatively small expenditure could make the post comfortable and healthful. At present it is neither.

Camp Eagle Pass, Tex.—The buildings are old and the woodwork badly decayed. The veranda of the barracks and the passage from the squad room to the mess room are sinking and separating from the main building, owing to decay of the supports. They have been repeatedly repaired, but are so rotten that further repair is impossible without renewal of much of the underpinning. The condition is really dangerous. The roof of the barrack is full of holes, and during the recent rains the men have been obliged to get up at night and move their bunks to avoid the streams of water coming through the roof. Many of the holes are so large that the swelling of the shingles during a continuous rain will not close them. The rainy season will soon be upon us, and if this leaky condition be not remedied the men will have two months of discomfort, if there are no more serious results. The roof is thoroughly rotten and sags down in many places. The shingles are so rotten that they will not hold nails, and when the eave troughs fill with water their weight drags out many of the nails and they festoon the building in rather an unsightly manner. If a new roof can not be put on, I would respectfully suggest that the building be covered with paulins before the rains set in, an expensive process, to be sure, but justified, in my opinion, by the necessities of the case.

Boisé Barracks, Idaho.—No general terms can possibly define the sanitary condition of the buildings here, so different are they in construction, plans, and surroundings as well as in the possession or lack of conveniences for comfort. To begin with, the quarters for the enlisted men are with few exceptions as good as could be expected at such a place as this. They have good ventilation, good air space, good and safe heating appliances, good cooking appliances, good light generally, and they are kept in good, cleanly condition. * * * The officers' quarters have rooms enough in each of them, but the quarters are not well planned. They are drafty and inconveniently constructed. Their water-closet facilities are abominable, and the bath houses attached to them are practically useless because of the danger of being chilled after bathing in unhealthy rooms separated from the generally occupied parts of the house. No good heating arrangements are provided for the bathrooms of either men or officers. Water heaters in each room would be a boon. * * * The married soldiers' quarters are old and built of logs. They harbor bedbugs and invite catarrhs. Their condition has been set forth by my predecessor. I feel that I need not allude to them further now than to disparage them.

The difficulty of keeping the men warm in quarters is reported from Fort Pembina, N. Dak.:

The barrack rooms have been uncomfortable during the cold weather, as it has been found impossible to heat them sufficiently. * * * I recommend that the squad rooms be suitably ceiled and floored, and that the height of the rooms, which is now 14 feet, be reduced to 12 feet; such an improvement would in my opinion contribute very materially to the comfort of the occupants and at the same time afford sufficient air space. It is absolutely necessary for the welfare and health of the command that the barracks be made more comfortable than they are at present in cold weather. * * * The temperature of this post during the nights of the past month (January) has averaged 19° below zero, on the night of the 25th it was—46°, and on the night of the 27th—43°. Consequently considerable suffering from cold was experienced by the inmates of the barracks.

The quarters of the officers and of the married soldiers are at some posts not in good condition:

Fort Wadsworth, N. Y.—Complaint is made that some of the officers' quarters are not in good condition on account of the leakage and water standing in the basements.

Fort Stanton, N. Mex.—The quarters occupied by the married soldiers are old, dilapidated and very much in need of repair.

Fort Du Chesne, Utah.—The quarters are good except that several of those occupied by married men leak badly.

Fort Missoula, Mont.—Old log buildings are occupied by married enlisted men, the floors of which are generally poor and very close to the ground, leaving little or no area for ventilation underneath In winter it is necessary to do laundry work within doors, and the soil in some of them has become polluted with waste water used for this purpose.

Thirty years ago in the British service the dormitories of the men had at many of the barracks an allowable occupancy which was lettered on the door of the room and was not permitted to be exceeded; and during all these thirty years we have recognized in this country the need for a certain amount of floor space and of air space in our sleeping rooms as preservative of health. This is very well as theoretical sanitary knowledge, but we profit little by it when we find our troops crowded as at Fort Columbus, N. Y., in a minimum of 380 cubic feet per man and a maximum of 460 feet:

FORT COLUMBUS, N. Y.—*Maj. J. R. Gibson:* Limited capacity of the squad rooms or dormitories of the three companies composing the garrison. These apartments are overcrowded. The minimum cubic air space per man is 380 feet (A battery), the maximum 460 feet (C Battery).

FORT BAYARD, N. Mex.—*Capt. E. T. Comegys:* The barracks are too small for the full strength of the companies and troops. The infantry barracks are only large enough for 40 men, and the cavalry for 58 men.

ANGEL ISLAND, CAL.—*Maj. C. E. Munn:* My attention has been particularly called at the recent monthly inspection to the crowded condition of the barracks. As the companies are now recruited to their full strength, very little floor space is left between the bunks. As yet I have observed no sickness in consequence, although there have been much inconvenience and discomfort. At present I have no recommendation to make, but desire to suggest that in the immediate future the barracks will have to be enlarged to fulfill modern sanitary requirements.

Fort Thomas, Ariz., Lieut. E. L. Swift, referring to the crowded condition and faulty ventilation of soldiers' quarters, and suggesting that an unoccupied set of quarters be placed in suitable repair, states:

I am informed by the post quartermaster that there is no material at the post to effect this much-needed reform. In view of this I would recommend that the attention of the authorities empowered to grant the necessary material be called to the spectacle of rooms crowded with rows of beds, from 1¼ to 2 feet apart, the air of which at night reeks with the close, confined stench of saturation with animal effluvia. Twenty-one different men have been excused from duty since the 15th of the month, and others have been treated without being excused.

WILLETS POINT, N. Y.—*Maj. Clarence Ewing:* The barracks are continually overcrowded and there is no provision for ventilation. This same evil is the subject of complaint during the whole year.

Deficient ventilation is, however, the chief subject of complaint with regard to the barrack rooms. In many instances no provision has been made for ventilation, except such as is afforded by the doors, windows, and the chinks of imperfect construction. These answer very well in mild and warm climates, but at a majority of our posts something more must be done. Usually when special provision is made for a fresh-air inflow it is brought in by boxes under the floor, opening near the stove, and the outflows are either in the ceiling leading to openings in the ridge or in the walls near the ceiling and the floor opening into the chimney flues. Many faults in attempted systems of artificial ventilation might be pointed out, but those most common in our barracks manifest an utter want of knowledge of this subject on the part of the officers responsible for the construction of the quarters. There is frequently no provision for a fresh-air inflow, the opinion appearing to prevail that if an exit is provided the foul air will go out and fresh air will come in since nature abhors a vacuum; but it is not always clear how nature can avail herself of the exits. There is no air current in a bottle, although its stopper be removed, and there is oftentimes no air current in a barrack room, although there may be a hole in the ceiling communicating with the external air. Not infrequently, however, the hole in the ceiling communicates only with the closed attic and does no more for the ventilation of the room when it is open than when it is closed. When ridge ventilation, so called, is provided there is frequently an utter lack of proportion between the registers in the ceiling and the opening in the ridge; and so also, when shafts have been built, they are frequently incompetent to perform the work for which they were intended.

Take, for instance, the case cited below by Major Woodhull at Fort Sherman, Idaho, where to properly ventilate the barrack room 108,000 cubic feet of air per hour are required. The only arrangement for supplying this is an exit for the contained air when it is displaced by the incoming air, for which incoming air there is absolutely no provision. The exit consists of two registers 20 by 23 inches each, but so reduced by iron latticework that both combined give but 135 square inches in the clear. Assuming that there is a free ventilating inflow into this barrack room, the contained air would have to whistle through the exit at the gusty rate of 30 linear feet per second to accomplish the intended object. When such insanitary architecture is perpetrated it well may be said that some one conversant with the sanitary needs of the soldier's dwelling should have been consulted before the plans were approved and the money expended for the work. If it be held that Fort Sherman is an old post, and that nothing of the kind occurs at the present day, I desire to invite attention to a barrack building recently erected at Columbus Barracks, Ohio. This building consists of a center and two wings, the former of three stories containing orderly rooms, offices, storerooms, etc., the latter, each of two stories, used as squad rooms or dormitories. They measure each 68 by 30 by 12 feet, and are each subdivided into fifteen cells or stalls, each 9 by 8½ feet, and separated from the others by a partition 8 feet high, leaving the upper 4 feet of each room common to all the subdivisions. Such an arrangement of course adds materially to the difficulty of properly ventilating these barrack rooms, yet no provision whatever was made for ventilation. A little knowledge of the need for fresh air, and of the means of introducing it and of removing the respired air, would have modified the plans for this barrack so that if the stall arrangement had been insisted upon for the sake of privacy, which by the way is inconsistent with the family character of the military company or troop, there would have been proper provision for the ventilation of the stalls in the original plans.

At the same post I find recently constructed officers' quarters with so little attention to drainage of site and the exclusion of subsoil that 60 buckets of water were bailed out daily from a hole in the cellar floor measuring not more than a cubic foot. Here were the causative conditions of rheumatism, pneumonia, and consumption for the families condemned to occupy these quarters. When such sanitary faults come within my cognizance in the reports of the medical officers of the Army, I can not refrain from reiterating the recommendation made by the Surgeon-General of the Army in the Annual Report for the year ending June 30, 1888, p. 103, in the following language:

> The formulation of a general plan for the improvement of the sanitary conditions now prevalent throughout the Army, especially those connected with the construction of quarters and with water supply, drainage, disposal of nightsoil, bathing facilities, food, and clothing, is a matter of so much moment, and involves the consideration of so many questions of a diverse nature and the reconciling of so many conflicting interests, that it ought to be intrusted, not to any one officer nor to the officers of any one arm or department, but rather to a board of officers, who should represent different branches of the service, and should be selected because of their special fitness for the duty required. No argument can be needed to demonstrate the necessity for a full representation of the Medical Department in the organization of such a

board, for it is obvious that, by reason of his special training and experience, the opinion of the military surgeon and sanitarian upon almost any question likely to be presented for the consideration of the board must be entitled to considerable weight, while without his advice and assistance a satisfactory solution of many problems of sanitation can not be hoped for.

I earnestly recommend the appointment of a sanitary board as indicated above, and that this board be charged with a thorough investigation of and report upon the sanitary conditions prevailing in the military establishment. This report should include a statement of the nature and probable cost of proposed improvements, and upon it can be based any action which may be deemed advisable. If it be found, as it doubtless will be, that current appropriations are insufficient to meet the cost of the changes recommended, Congress can very properly be asked to provide the necessary funds.

Generally when improvements are to be made the views of the medical officer are requested and have due weight in the decision of unsettled points, and in hospital construction the regulations call for the opinion of the medical officer and constitute that officer the inspector of the work on behalf of the Medical Department; but other buildings and important sanitary works are sometimes planned and carried to completion without reference to medical opinion. The need of subsequent alterations, so frequent in the experience of the past, would often be obviated were the views of the medical officer to have full consideration before final action is taken in all such cases. In fact, medical officers are maintained at military posts not so much for the treatment of the individual sick, as to guard against sickness by recommendations based on their knowledge of the causes of disease. Hence, if it be deemed inadvisable to organize such a board as is recommended above, I would suggest, in the interest of the service and for the protection of the Government against possible mistakes, that the Regulations of the Army be so modified as to place all buildings at military posts on the same footing as hospital construction, and in all such cases, before the plans leave the post, the local medical officer be requested to give in writing his views on the sanitary questions of location, drainage, sewerage, ventilation, heating and lighting, and that the report of completion, so far as sanitary matters are concerned, be accompanied by a like report from the medical officer.

Major Happersett entered a protest against the rough or sand finish of the walls of the barrack buildings and water-closets of Fort McPherson, Ga., which appears to be well taken in view of the sanitary opinions that are now dominant. The inequalities of the sand finish offer a convenient harborage for all types of bacterial dust, and certainly the hard and smooth finish which he recommends is cleaner and necessarily more healthy.

FORT MCPHERSON, GA.—*Maj. J. C. G. Happersett:* Except the officers' quarters the inside walls of all buildings here have a "rough" or "sand" finish, which, for barracks and water-closets especially, is extremely objectionable from a sanitary point of view, furnishing a safe and convenient harbor for all types of disease germs. Investigation and experience have demonstrated that the smoother, harder, and more impervious to moisture all such walls are rendered the safer and better for health. I would therefore recommend that the walls of the buildings intended for occupancy by troops have the customary hard finish, being far less objectionable and, as I am informed, not more expensive than the present method.

FORT SHERMAN, IDAHO.—*Maj. A. A. Woodhull:* The second matter for the consideration of the commanding officer is the ventilation of the barracks. The men's sleeping rooms, the so-called squad rooms, occupy the second story of the barrack building and are uniform in plan, although two have higher ceilings than the other two. The smaller of these, 133 by 23 by 10 feet, 30,590 cubic feet, has adequate floor space and cubic capacity for its average occupancy, but in common with the others has no proper provision for the change of air. Taking a company of 54 men, with a nightly average present of 36, and a maximum thus present of 48, we find that in order to give each of the 36 men 3,000 cubic feet of air per hour (the proper allowance) the whole 30,590 cubic feet must be changed a little more than three times per hour, and for more men the change must be made more frequently. There is no provision for the direct admission of the external atmosphere, and what does enter makes its way through undesigned openings in construction. The presumed escape of the contained air is through two so-called ventilators, 20 by 23 inches each, covered with lattice work. Each of these has 30 lozenge-shaped openings 1¼ inches square, or in both a total of 135 square inches, somewhat less than a foot. These openings communicate directly with the attic, which is not accessible in any other way, and the attic communicates with the outer air by small, slatted openings at each extremity and midway on the two sides. The contained air in the squad room can not pass out through these openings to any appreciable extent, and if it could they are too small to properly ventilate the room. There should be a minimum of 6 square inches per man for formal exit, which makes allowance for imperfect construction and for the draft by the stoves. For temporary relief, with little expense and trouble, I advise the introduction through the roof, just within the outer wall, near the eaves, of each side of the squad room of 6-inch tubes, to extend as high as the ridge and to be capped sufficiently to exclude the rain. These are made of galvanized iron, but ordinary stovepipe or tin water pipe will answer for the time. These can be put in without difficulty and will materially add to the comfort and health of the men and relieve the close and stuffy feeling that now prevails at night. A radical and permanent improvement of the ventilation should be through the ridge, and might properly be a subject for the next year's estimates by the quartermaster.

FORT RENO, OKLA.—*Capt. J. C. Merrill:* Bad ventilation of barracks; sanitary condition of the houses occupied by enlisted men wretched. The cubic air space in most of the barracks is sufficient, *per se*, averaging over 1,000 cubic feet per man, the lowest being in the south and north dormitories of E troop, in which it is 884 and 750 cubic feet, respectively, with a floor space of 74 and 64 square feet per bunk. Such average air space is, however, practically much reduced by the defective ventilation. Where air shafts have been put in their size is wholly inadequate; thus in the dormitory of G company, which has a partial partition, but is practically one room of 98 by 28 by 12 feet (32,928 cubic feet), there are two shafts each 1 foot square and a third 15 inches square. In a majority of the dormitories there is no shaft, a hole in the ceiling opening into a dark attic. In B and G troops there is a latticed opening in a hipped projection from the attic facing south; the prevailing wind from that direction has the effect of forcing the attic air down into the dormitories. No inlets are anywhere provided. It is suggested that the hanging lamps be suspended immediately under all shafts and ceiling openings to cause a certain amount of updraft during the evening; but it is again submitted that in all the barrack dormitories at this post the means of ventilation are altogether inefficient.

FORT RILEY, KANS.—The question of ventilation of the barracks is still a vexed one.

FORT BOWIE, ARIZ.—Quarters good. The barracks are inadequate and poorly ventilated.

NEWPORT BARRACKS, KY.—Lack of proper and sufficient ventilation of the lower dormitory of the men's barracks.

CAMP POPLAR RIVER, MONT.—*Lieut. J. D. Poindexter:* All the houses at the post except the post hospital are imperfectly chinked and improperly ventilated. There is in winter no way to fully ventilate the houses except to open the doors, and this keeps the floors many degrees colder than the ceilings. It is not uncommon to find the temperature 30 degrees colder at the floor than it is 6 feet above. As a result of this, nasal and bronchial catarrhs and headaches prevail to a far greater extent than the sick returns show, for the men are not usually excused from duty when suffering from these comparatively trivial complaints.

FORT MASON, CAL.—*Capt. H. O. Perley:* Ventilation is poor and unsatisfactory, especially in the squad rooms and guardrooms of the post guardhouse. Two of the squad rooms have ridge ventilators, but no means have been provided in any of the rooms for the admission of air. The third squadroom has no ventilation other than the ordinary windows and doors. The post guardroom, occupied by one non-commissioned officer and four privates, is entirely lacking in proper means of ventilation. There is also need of more sunlight in the barracks. I would respectfully recommend that all the windows in the squad room and post guardroom be utilized as means for admitting fresh air by placing a triangular box frame in the window casing of the upper sash of each window, and covering the top of said box with fine wire gauze; by this means the upper sash could be lowered 6 inches, and fresh air coming in could be directed to the ceiling and properly diffused around the room.

FORT WASHAKIE, WYO.—*Lieut. Chas. F. Mason:* The natural conditions of this post are certainly such as would give promise of the utmost healthfulness. Locate on a porous soil several feet above the river level, with excellent natural drain to that stream, with an abundant supply of pure water, dry air, comparative dom from winds, and almost constant sunshine, we must consider the cause ease artificial and avoidable. Upon looking over the hospital records I find that the excessive amount of sickness may be referred almost entirely to the following classes: Rheumatism, muscular and articular; follicular tonsillitis and neuralgia; the presence of follicular tonsillitis is especially marked. These diseases are closely allied as to causative influences, and prominent among the causes in my opinion are systematic depression from slow organic poisoning and undue exposure to cold. Now the conditions of this post are just such as the nature of these diseases would lead us to expect. In the first place, privy sinks have been in use here for years, and these sinks are situated a very short distance from the barracks. The barracks themselves, with one exception, are old adobe buildings whose walls have for years absorbed organic exhalations from their occupants. These barracks have no ventilation under their floors and no special openings for the entrance of fresh air, though exits are provided in the roof. The air from the outside being very cold, the windows are kept closed, and as air must enter somewhere, much of it is ground air coming through the floors and undoubtedly contaminated by the adjacent privy sinks. Again, during the winter I have found, upon visiting the barracks and guardhouse, that the windows were all closed, the rooms very hot, the men lying scantily covered upon their beds and the air close and offensive; in other words, the conditions were most favorable for the development of colds, should a door be suddenly opened; add to all this that the barracks have been at times overcrowded, and I think we do not have to go farther to seek for the cause of disease. The guardhouse, especially, has been frequently overcrowded. Each cell has no means of ventilation except one small window, and this I have always found closed. The causes of disease having been ascertained, the remedies are obvious and have already been suggested. The old adobe barracks can never be made thoroughly healthful, but sub-floor ventilation, introduction of fresh air into the squad rooms, and free use of whitewash will much improve them; the guardhouse should be enlarged, but in the meantime can be much improved by the measures indicated for the squad rooms. Measures have already been taken to substitute water-tight vaults for the present sinks. It is proposed to have separate vaults for the urine, and to use in all a mixture of dry earth and sulphate of iron, the vaults to be emptied when full. While I do not believe this is the best system of disposing of excreta, it is the most practicable one for this post at the present time.

FORT LEAVENWORTH, KANS.—*Maj. A. A. Woodhull:* The ventilation of certain buildings is not what it should be. The ventilators in the new brick barracks have no direct connection between the ceiling and the squad room and the exits at the ridge. The apparent openings in the ceiling are much diminished by the ornamental iron work, and there are not enough of them for the size of the room, especially with its increased occupancy. So-called ventilating shafts in the infantry barracks from the first sergeants' offices do not extend through the roof, as should be the case, and to which attention has been called. This is also true in the officers' quarters at the west end. I am of opinion that the ventilating shafts in the infantry barracks should be extended higher in order to secure better the effects of aspiration. Although the ventilation of those quarters has been much improved it is not yet adequate for the approaching season of closed doors and windows.

COLUMBUS BARRACKS, OHIO—*Inspector-General R. P. Hughes:* In the matter of ventilation for the new barracks I desire to say that this building is too good not to be attended to. It is heated by means of steam and the dormitories are reached by a hallway. When the dormitory doors, which are swung on the center, and windows are closed, there is no possible way for the ventilated air to escape or for fresh air in proper quantity to enter. The occupants of these rooms are constantly changing, and are assembled from widely segregated districts. It is impossible to tell what dangerous organic microbe may be set afloat in the confined air space of these dormitories, and if an opportunity is not given for the escape of such organic matter serious trouble may be the consequence. I think ventilating shafts could still be introduced without doing much damage to the building, and for slight expense, and I recommend that it be done.

Capt. A. A. De Loffre: I have the honor to submit the following report, referring to the indorsement of the Surgeon-General on copy of the report of Col. R. P. Hughes, Inspector-General, U. S. Army, in the matter of ventilation of the new barracks at the depot, under date of November 23, 1889. I will state, by the way, that this building has been completed and occupied about six weeks, and that, as the inspector states in his report, no provision was made in the plan for artificial ventilation, although proper ventilation might have been secured at very little additional expense. In order to understand the peculiar difficulties which are encountered in devising a plan for artificial ventilation to this building it will be necessary to describe it. It consists of a main building with two wings. The main building has three stories and contains orderly rooms, offices, storerooms, etc., and in this report will not be considered, because the natural ventilation is sufficient. The wings of the main building are each two stories in height and are used as squad rooms. They measure

30 by 68.7 by 11.11, and are subdivided into fifteen cells, each cell being 8¼ by 9, with board partitions 8 feet high, a doorway being placed in the center of the front partition. These stalls contain each two beds, two wardrobes, a window, and are occupied by two men. The air space per man, without taking into account the partitions, the wardrobes, etc., is 817 cubic feet, but deducting 75 cubic feet per man for the above articles, which estimate I do not believe to be excessive, it leaves 742 cubic feet per bed.

The whole building is heated by steam. It is not possible to use the flue connected with the steam apparatus as an aspirator shaft because it is attached to the main building; hence, if artificial ventilation is deemed necessary, an aspirator shaft will have to be provided. If the dormitories were only one story in height the problem might be easily solved by the double tube of McKinnel; but under existing circumstances I can not see how it is possible to dispense with an aspirating shaft, and it seems to me that one might be added to each wing without doing damage to the building. Just at this point, however, another difficulty presents itself. Supposing an aspirating shaft is built, it will be necessary to provide for the admission of fresh air, which may be done by surrounding one or more of the steam radiators with a jacket and connecting it by means of a flue under the floor with the outside air. But how can air be made to circulate freely throughout a room which is partitioned off as before described? I do not believe it will be possible. I must confess that I have not had sufficient experience in such matters to be able to devise a plan for ventilating the dormitories in question without assistance of some one who has made the subject of ventilation a special study. If, however, the aforesaid partitions were torn down, matters would be much simplified. So much on the subject of ventilation, taking it for granted that in this case ventilation is necessary. I think it was a great omission that artificial ventilation was not provided for this set of barracks when it was built, but it having been omitted in this case, I think the necessity for supplying it now is not sufficiently apparent. It will be a costly affair, and may not after all attain the desired end. * * * I have been informed that the post quartermaster has had orders to devise some means of ventilation for the aforesaid dormitories, and that he employed a plumber to draw up the plans and specifications. I tried to find out what these plans were, but they had gone to Washington and no copies were retained at the post. The plan may be a valuable one for all I know, but the chances are it will really prove of benefit only to the contractor. * * *

I beg leave to submit the following report in regard to the sanitary condition of at least three of the set of officers' quarters recently completed: No provision was made for draining the cellars of the aforesaid quarters, and in consequence thereof they are extremely damp by reason of the floor or bottom being saturated with water which percolates through the outside earth. To give an idea of the amount of water these cellars contain I will state that an officer who occupies one of these houses informs me that he has had his cellar bailed out every day for at least a week, and that 60 buckets of water were taken out on an average daily from a hole in the cellar floor not more than a foot square by a foot deep. Aside from dampness which is caused by the cellar not being drained, the cold-air box leading to the furnace, and which is constructed under the floor of the cellar, is nearly half full of water all the time, and in consequence a sufficient amount of air can not be supplied to the furnaces for the purpose of heating the houses. I speak authoritatively when I say that in my own house fully 800 pounds of hard coal have been consumed in 3 days without producing a sufficient amount of heat when the thermometer ranged — 25° F. The furnace would be red hot; but not a particle of hot air would pass through about half of the registers; of course if cold air is not supplied to a furnace one can hardly expect warm air to come from it. In addition to these defects I will state that the floors of the cellars are lined with ordinary brick, which being porous absorb water like a sponge until saturated, and then of course the moisture finds its way throughout the house. Now, it seems to me that this state of affairs can not be conducive to a good or even fair sanitary condition of the aforesaid quarters, and I beg leave to request that immediate steps be taken to verify these statements, with a view of properly draining the aforesaid cellars, and otherwise making such improvements as may be necessary for the comfort and safety of the occupants of these quarters.

Much has been done during recent years to improve the condition of the guardhouses of the Army, but from time to time insanitary conditions, insufficient accommodations, defective ventilation, etc., are recorded by medical officers with a view to improvement, and with the result usually of some sanitary gain by the effort. The guardhouse should be as clean and well ventilated as any building at a military post. As Capt. Shannon observes: "The plainest fare, the hardest bed, and the most rigid confinement should in no way interfere with th strict observance of hygienic details in the sanitary care of the prison and the prisoners." At several of our posts the prison room is overcrowded, unventilated, and foul, as may be seen from the following extracts:

CAMP POPLAR RIVER, MONT.—*Lieut. Poindexter:* Windows are much needed in the post guardhouse, and if these can not be supplied, stuffing the crevices between the sashes is desirable. The prison room, although sufficiently large, has no adequate ventilation. The stove does well enough for an outlet, but the opening through the guardroom door, which is used for an inlet, is worse than useless, for the air of the guardroom is even more vitiated than that of the prison room which it ventilates. Two shafts, each 10 inches square, carried through the ceiling and 5 feet above the roof, protected by a tower, would correct the defect. A flap could be used for partly closing each in cold and gusty weather.

FORT CUSTER, MONT.—*Capt. W. R. Hall:* All the buildings are in good sanitary condition except the guardhouse, which is simply a disgrace to the service. To place it in a clean, proper condition for occupancy would cost nearly as much as to build a new structure. Moreover the design is faulty in the extreme, there being only one room for garrison and general prisoners

FORT NIAGARA, N. Y.—*Maj. A. C. Girard:* Condition of buildings and quarters, clean and well suited to the wants of the garrison, with the exception of the guard and prison rooms, which are insufficient in size and ill-adapted to the purpose for which they are used.

FORT WINGATE, N. MEX.—*Maj. P. J. A. Cleary:* The guardhouse is in as good condition as such a building can be kept, but it is badly constructed and badly ventilated, old and dingy, and ought to be torn down and a new one built. The prisoners are wretchedly crowded.

FORT ADAMS, R. I.—*Maj. S. M. Horton:* The general prison room at the post guardhouse has no proper ventilation.

ALCATRAZ ISLAND, CAL.—*Capt. W. D. Dietz:* The sanitary defects of the prison are especially apparent at this season of the year. The ventilation of the buildings is very faulty. The corridors, kitchen, and mess rooms are disagreeably and dangerously drafty. The cells, when their solid doors are closed, leaving only a few inches space between the top and the lintel, simply can not be ventilated, and the prisoner, when locked in for the night, is virtually boxed up for so many hours. Moreover, as he is required to keep his night vessel in his cell, the atmospheric conditions that must of necessity occasionally prevail can readily be imagined. The guardroom also is devoid of sufficient means of ventilation and the air in it is often exceedingly foul, so much so that noncommissioned officers have complained of its sickening effects. The facilities for heating, bathing, washing, and laundrying which the prison affords are likewise inadequate. The means available for solitary confinement are such as have long been discarded in the better class of civilian penal establishments.

FORT APACHE, ARIZ.—*Capt. W. C. Shannon:* The guardhouse was evidently built with the one single object in view, security. Ventilation is defective, small airholes and windows. The capacity is entirely inadequate. The conveniences are the necessary bucket in a filthy, saturated corner of the prison room. The windows are too small and too few in number. * * * The air space of the guardroom permits of 450 cubic feet for each occupant, not estimating for the members of the guard actually on post, or for the sergeant sleeping in the guardhouse office. This is certainly limited, considering the absence of ventilation except by windows and the door. The prison room admits upon a basis of average occupancy of 530 cubic feet per man, an amount too small considering the limited ventilation and the present objectionable "convenience corner." The cells are relics of the subterranean dungeons of the Middle Ages; the fact that the purifying rays of the sun can never penetrate them is sufficient to condemn them. Fortunately, they are rarely used. If dark cells are necessities for disciplinary purposes, they might be constructed when required of removable planks, and with a positive assurance of efficient ventilation during occupancy. It is believed that the guardhouse should be the cleanest, the whitest, and the best ventilated structure in the post, that the plainest fare, the hardest bed, and the most rigid confinement should in no way interfere with the strictest observance of the most minute hygienic details in the sanitary care of the prison and of the prisoners.

WHIPPLE BARRACKS, ARIZ.—*Maj. B. F. Pope:* Attention is invited to the danger of requiring prisoners to sleep on the floor of the prison room in the post guardhouse, even when a bed sack is used. There are wide cracks in the floor of this room which are filled with decomposing organic matter, and there is at all times unavoidable dampness from proximity of the floor to the ground beneath. To meet this I would respectfully suggest that some kind of sleeping shelf or platform be provided for the use of the prisoners, which would serve the purpose of a bed. Ringbolts could be fastened to the walls, to which might be swung by iron hooks, light movable platforms, 6 feet long by 30 inches wide, and upon which the bed sack could be placed. These platforms should be taken out during the day for cleaning, and then stored in of the cells until night.

DRAINAGE, SEWERAGE, ETC.

The natural surface drainage at many of the posts is said to be efficient, as at Camp Del Rio and Eagle Pass, Tex., Fort Bayard, N. Mex., Fort Missoula and Camp Poplar River, Mont., Fort Buford, N. Dak., Fort Meade, S. Dak., Fort Du Chesne, Utah, Boisé Barracks, Idaho, Forts Apache, Huachuca, Lowell, and San Carlos, Ariz., Forts Canby and Spokane, Wash., and Fort Mason, Cal. At others the natural incline is aided by surface ditches, as at Fort Custer, Mont., Fort Lewis, Colo., and Fort Pembina, N. Dak. In some instances, as at Fort Davis, Tex., these failed at times to carry off the surface water.

FORT DAVIS, TEX.—*Capt. W. C. Borden:* During the months of September and October twenty-eight cases of remittent fever have occurred in this command, averaging 267 men, being nearly 10½ per cent of sickness due to this one cause. Most of the cases were obstinate, lasting from three to four weeks, and having a lingering convalescence. It is believed that the cause of this large percentage of sick is known and removable. The post is situated at the mouth of a cañon, down which, during the rainy season, the water from an extent of mountain country is poured. An attempt has been made to prevent this water from flooding the post by digging a ditch and throwing up an embankment. This has, however, proved ineffectual, as the soil of which the embankment is composed has no cohesion and breaks at every freshet; the water floods the officers' quarters several inches above the floor and carries surface washings with it under the floors, which latter, not being ventilated, are weeks in drying out; then it flows across the parade, floods the mens' quarters, and saturates the ground beneath them. The resulting underfloor dampness and the emanations from the slowly drying soil and surface washings are certainly unhealthy. This should be prevented. Something more than the loose soil is needed in the embankment to prevent the water from breaking through; but as a stone embankment would be costly, I would recommend that a board fence of sufficient height, well battened, braced at the back with deep-set posts, a ditch in front, and the soil banked up behind it be constructed for interception. Such a fence and embankment could be constructed at comparatively small expense, and with a small annual outlay for repairs would be effectual.[*]

From a number of posts come complaints of the want of an efficient drainage system. Slop water of all kinds is thrown upon the surface, and although this may have for a time no bad effect on the health of the garrison, in progress of years the soil necessarily becomes contaminated. The posts which have no provision for carrying off the waste water are also generally those where the field sink or earth pit has been dug, filled, and covered over so often that the lines of occupied quarters are surrounded at so many paces in their rear by a honeycomb of disused, hidden, and forgotten vaults filled to the surface with foul organic matters. The post surgeons at Fort Barrancas, Fla., and Boise Barracks, Idaho, make reference to these conditions in their report.

FORT BARRANCAS, FLA.—*Capt. W. C. Gorgas:* The latrines empty into pits; kitchen slops are carted off, and wash water is emptied on the ground under the houses, or thrown out about the doors and windows. The post is exceptionally situated for a drainage system. * * * When one thinks that this system has been in use on this same ground for the past 200 years, it is surprising that the soil is not a mass of decomposing organic matter. It is only the natural advantage of location, soil, and drainage that has allowed us to live so long in this way with comparative impunity; but its continuance is a serious menace to the health of this community.

BOISE BARRACKS, IDAHO.—*Capt. Marcus E. Taylor:* The surface drainage here is good in a way, but it lacks some main outlet. Furthermore, it has two serious defects which in sanitary supervision I can not overlook. One of them is the undrained depression southeast of the hospital that should have an outlet; the other is a grave defect in the drainage of the officers' quarters. These are built upon a steep hillside, with the rear of the quarters looking to the hill. Additions have been made, and these have pretty nearly run into the hillside. The additions are fairly in the ground, and under the floors is neither drainage nor ventilation. Dampness, colds, coughs, rheumatism, and diphtheria take the place of drainage and ventilation. * *

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[*] Fort Davis was ordered to be abandoned July 3, 1891.

adequate system of sewerage is badly needed at this post, with galvanized iron receptacles for garbage to be regularly removed to an authorized dump pile. Privy vaults and cesspools may be endured by the human system for a while, but hardly forever. * * * The surface drainage at this post would strike a new comer as being good, but investigation properly conducted will disclose the absence of drainage by method. The indefensible practice of privy vaults that are not cared for even through the subterfuge of putting disinfectants upon their disgusting contents, the cess-pit system for slops that intensifies every imaginable protest against polluting underground air by privy vaults, untrapped and unprotected connections, with abominations like them, disclose a sanitary surprise.

The substitution of the dry-earth system by pail or box for the sink or earth pit has been a sanitary measure of great value at many posts, as at Fort Sheridan, Ill., Forts McIntosh and Elliott, Tex., Fort Lowell, Ariz., Fort Marcy, N. Mex., Fort McKinney, Wyo., and Fort Yates, N. Dak. Sawdust was used as an efficient substitute for dry earth at Fort Missoula, Mont. The metal pail has proved greatly superior to the wooden receptacle. The wooden boxes at Camp Eagle Pass, Tex., leaked badly during the year. The post surgeon at Fort Bennett, S. Dak., has urged the adoption of the dry-earth system, and similar recommendations at Fort Buford, N. Dak., and Whipple Barracks, Ariz., have been carried into effect. At Fort Townsend, Wash., the sinks gave place to a sewerage system with water-closets and ample flushing tanks, and at Fort Wingate, N. Mex., the new sewerage system when completed is expected to be a valuable addition to the sanitation of the post.

The dry-earth system entails labor, but is considered satisfactory when properly carried out. Neglect gives rise to such reports as the following:

MOUNT VERNON BARRACKS, ALA.—*Maj. P. J. A. Cleary:* All the privies were foul, emitting a sickening odor, and in several were large masses of maggots. Anything more revolting it would be hard to imagine. These privies have what are known as boxes, which are cleaned or emptied by contract once a week. Dry earth is supposed to be thrown into them whenever used, except in the privy used by the enlisted men, where it is supposed to be thrown in every morning. But even where the earth is thrown in it does not seem to suppress the foul emanations, partly because the earth is chiefly sand and partly because the boxes are wooden, old, and thoroughly saturated with filth. The privies, too, are the most wretched structures that could be erected for such purposes. Some are worse than others, but for the most part they are quite small and without windows or ventilating shafts, so that on entering one has to endure the heat and filthy odor. Several of the boxes leak badly, which of course makes the vicinity always foul. The remedy for this state of things is evident. The boxes should be cleaned daily. New boxes should be supplied, either of iron or wood, zinc-lined. All the old privies should be torn down and suitable structures erected. I recommend that these changes be effected with as little delay as possible, for with such conditions at the beginning of summer one can readily imagine how much more aggravated they will be later on. I desire in this connection to recommend that a suitable structure be erected for the storage of dry earth to be used in the privies. The earth is now hauled and dumped under a shed which does not protect it from rain; consequently, wet and worthless earth is frequently used.

The primitive character of the water-closet provision of Fort Hamilton, N. Y., was referred to in the last annual report from this office. It has remained unaltered during the past year, and that provided for the prisoners at Alcatraz Island seems to be of an equally uncomfortable and dangerous character.

FORT HAMILTON, N. Y.—*Maj. Ezra Woodruff:* I respectfully invite attention to the character of the men's sinks at the barracks of Battery I and Light Battery K. They consist of an immense trough with a beam or scantling laid along the front edge on which a man must sit. Everything behind is open. It is a recognized fact that these crude arrangements are unsanitary in the highest degree; the whole spinal column is subjected to draughts of air, which may cause sciatica and muscular rheumatism. The disgusting sights and odors and the lack of privacy condemn the plan utterly.

It is a modification of the fence rail on two crotched sticks over an open pit used in the field.

Alcatraz Island, Cal.—*Capt. W. D. Dietz:* The prison sink, situated at the water's edge, is primitive in design, and in the inclement season a fruitful source of colds, due to exposure to strong currents of wind which blow up through the one large unguarded opening in the seat.

At posts which have a water service and sewerage system much attention has been paid of late years by our medical officers to the plumbing. Many defects have been remedied, and in other cases in which the remedy involved expenditure which placed it beyond the reach of the post quartermaster and commanding officer, special reports have been forwarded with estimates for a system that would meet the requirements of modern sanitation. The faults that are commonly reported are leaks and breaks in house drains, the sealing up of such drains under cellar floors so that it is difficult to ascertain their condition, the want of proper traps to prevent the ingress of sewer air into living rooms, the want of vents to these traps to prevent siphonage, the opening of such vents, when present, in position to taint the air of the dwelling, and the want of adequate means to flush the soil pipe, sometimes arising from defective water supply, as notably at Fort Riley, Kans., where the water so used has to be hauled in barrels—sometimes from defective arrangement to utilize the supply, as where 1¼-inch pipe delivers into a 4-inch pipe.

There is no more important sanitary subject than this, so far as regards the local origination of disease; and medical officers are called upon to investigate with the utmost care every point connected with the plumbing and sewerage of their station, and report the result of their investigation to this office.

Illustrations of the points referred to may be found in the following extracts from sanitary reports:

Jefferson Barracks, Mo.—*Maj. D. G. Caldwell:* The men's sinks are old and leaky, and have no satisfactory system for flushing. These sinks should be supplied with iron tanks and an automatic system of flushing.

Madison Barracks, N. Y.—*Maj. J. D. Hall:* The water-closets of the several barracks are deficient in size of pipes, not giving a free enough flush to clear the pans thoroughly.

Columbus Barracks, Ohio.—*Capt. A. A. De Loffre:* From long use the closets have become foul, and in some instances leaky. They require a great deal of care to prevent the escape of sewer air; in fact, from a personal experience of over six months, I do not believe it is possible to prevent a certain amount of sewer air from escaping into a room every time a closet is flushed. The closets referred to are by far the most imperfect ones at this depot, and in my opinion they can not be repaired in a satisfactory manner; they should be replaced by new ones of a more modern type as soon as possible.

Fort Riley, Kans.—*Capt. R. R. Ball,* commenting on the flushing of the water-closets by a water supply hauled in barrels, says: "This is of course inadequate, and unless connections can be made with the water system at this post I would recommend that the connection with the main sewer be cut off and the old system of earth closets be returned to. As it is now, the pipe leading to the main sewer is broken and exposed, and the latrine stands half full of stagnant excrement. In the old earth closets this would in a measure be corrected by fresh earth as an absorbent and disinfectant."

Newport Barracks, Ky.—*Capt. H. J. Raymond:* The Jennings water-closets in the officers' quarters are old and worn out, and though frequently put in repair, the work, from the nature of the case, can be but little better than a temporizing measure. The water-closet in the post surgeon's quarters is especially defective, and I am aware that similar defects exist in most of the closets at the post. It is recommended that they be replaced by closets of the flush-tank system.

Fort Mason, Cal.—*Capt. H. O. Perley:* The surface drainage is excellent. The natural slope of the ground and character of the soil are such that all water is quickly carried off. The sewage of the post is carried into the harbor by iron soil pipes.

These are frequently flushed and kept in good sanitary condition. * * * The plumbing was thoroughly investigated and tested with peppermint. The bath tubs, kitchen sink, and wash sink in the barracks were not in good repair, improperly trapped, without vents, and the soil pipe receiving the discharges from these fixtures was not ventilated in any way. This drain connects with that from the company sinks, making safe and reliable traps an imperative necessity. The hospital has an old zinc-lined wash sink, a zinc-lined bath tub, an old siphoned closet and urinal. The soil pipe has no running trap or fresh-air inlet, and does not extend above the fixtures. There is a continued complaint from the hospital attendants and patients of the odor in the bathroom, and disinfectants have to be frequently used. The plumbing in officers' quarters No. 1 was found to be in good condition. The remaining five sets of quarters could not be tested with peppermint oil without opening the main drains, as they had no fresh-air inlets, and in two cases the soil pipe did not extend above the fixtures. In all of these quarters I found old "pan closets," "knot traps," and the whole plumbing was in a decidedly unsafe and unsanitary condition. The rain leaders in two of the sets served as ventilators, and discharged sewer air under bedroom windows. There are five pit closets. They are made by digging a hole in the ground and supporting the sides and ends by boards. Four of these are in daily use. They have not been cleaned out for some time, nor have they been regularly disinfected. Five drains of vitrified ware, from 12 to 4 inches in diameter, carry the sewage to the beach. These drains have been broken, so that 2 of them discharge on the beach above high water, and 2 open on the cliff at some distance above the beach. There are no manholes or other means of ventilating them.

FORT SHERMAN, IDAHO.—*Maj. A. A. Woodhull:* Latrines, earth pits; drainage into cess pits. It is probable that some of the kitchen waste pipes are coated with grease containing other animal matter, and that this coating diminishes their caliber and gives some odor. A strong, hot, alkaline solution poured into them at stated intervals will obviate or diminish this, and I recommend that instructions to the following effect be issued: Company, troop, and detachment commanders and officers occupying quarters will cause their kitchen sinks to be cared for in this manner: Once each week, after the sink has been cleaned, a quarter of a pound of lye dissolved in 1 quart of boiling water will be poured gently, while still very hot, into the waste pipe, and allowed to remain in the trap overnight. No other water must be used in the sinks until the next morning. The contained grease will then be dissolved and will be carried off when the trap is flushed next day. * * * Relative to proposed sewer, especial attention is invited to the importance of the pipe being sufficiently small. The constant temptation is to have the caliber of the sewer too great, in which case the force of the flow is diminished and the waste lodges instead of passing off. No material increase of the post need be anticipated or provided for as with a growing town, and as storm water should not enter the sewers, a very moderate caliber will suffice for the future as well as for the present. A 6-inch main will be ample and a smaller one would probably suffice. In fact, on the Long Island coast, a settlement of 23 country houses with water closets and bath tubs used for 9 years, and probably is still using, a 4-inch sewer, laid across a salt marsh for 2,800 feet, having a total fall of only 3 inches, in which no stoppage has occurred and no trouble of any sort has been met with. A 3-inch pipe from the quarters and the same from the barracks will be sufficient. A too large pipe will admit bottles, brushes, shoes, and other solids that experience shows soldiers will introduce until well instructed in using water-closets and sewers. The most important point, however, is that of construction. It is vital that the sewer line have all the proper accessories, and that the material be of first class, and also be laid by skilled workmen under the careful supervision of an expert. Such mechanics and agents are scarce, but a good sewer properly laid is indestructible except by violence, while a poor line poorly built is a never-ending source of trouble, exposure, and danger. I regret to say that poorly laid sewers are too common at military posts. Unskilled workmen and inexpert overseers can not lay such a system. I recommend, therefore, that the estimates provide not only for perfect material, but for expert service as indicated.

UNITED STATES MILITARY ACADEMY, WEST POINT, N. Y.—*Maj. Henry McElderry:* The drainage and sanitary condition of the cadet hospital, officers' quarters, and cadet sinks remain unsatisfactory—the same as already reported in my special and last two monthly sanitary reports.

After the repairs made by the post plumbers of the water-closet pipes of the cadet hospital were completed, as reported in my last sanitary report, the soil pipes throughout the hospital were again tested, and several of the water-closets were found still leaking. It is probable, as reported already by the post quartermaster, that the water-closets themselves are defective, and that the leaks occur around the handles of the pull-up, the side water seal being siphoned out.

It has been observed that in many officers' quarters the soil pipe inside the walls of the house is of earthenware instead of iron, as it should be, and that the connection of the earthenware and iron pipe being made of cement is liable to leakage; several leaks in the soil pipe in officers' quarters have occurred from this cause during the month.

The quarters occupied by Lieuts. Boughton and Alvord have been filled with sewer gas during the month by the soil pipes not being properly extended above the roof; one of the soil pipes ending just below the roof, and the other extending a short distance above, being capped and a space left between the soil pipe and the roof, and the soil pipe not being trapped, the gases from the sewer readily found an entrance into the house. I recommend that an examination be at once made of the manner in which the soil pipe extends above the roof in all the officers' quarters, and if any be found thus defective, that the unsanitary condition of affairs be remedied.

There have been three cases of scarlet fever during the month among the corps of cadets, viz: Cadet Louis H. Bash, fourth class; taken sick April 1, now convalescent, out of quarantine; Cadet Louis B. Lawton, fourth class, taken sick April 5, now convalescent, still in quarantine; Cadet Frank M. Caldwell, first class, taken sick April 5, returned to duty April 15.

Cadet Ernest B. Gose, first class, was taken sick April 4 with diphtheria, and is now under treatment, convalescent. The rooms and clothing of these cadets, and that of their roommates, were, on the appearance of each case, immediately disinfected by burning sulphur and washing with solution bichloride of mercury, and every precaution taken by isolation and disinfection in hospital to prevent a further spread of the disease. There has been one case of diphtheritic scarlatina at the post during the month, in the person of the elder son of Maj. Spurgin; he is now convalescent.

One case of varioloid has occurred at the post during the month; the son (a child 8 years old) of Lieut. Weaver, being taken sick with the disease April 10, 1890. The case was slight, but well developed. The family were all promptly vaccinated, and all unprotected persons at the post have also since been vaccinated or revaccinated.

In my opinion the last 2 cases of disease were both caused by sewer gas. The water-closet in Maj. Spurgin's quarters is an old-fashioned pull-up closet like those in the cadet hospital, and is liable to leak in the same manner. His 2 other younger children have been several times sick with fever and sore throats since my arrival at the post.

The case of varioloid occurred in Lieut. Weaver's family immediately after the family had been quarantined for several weeks on account of fever with sore throats, which at first was feared might be scarlet fever, and while sewer gas was known to be permeating the house.

The amount of the water supply seems to be ample for all purposes; the insufficient supply in certain cases for flushing the water-closets being due to the need of modern style of water-closets with cisterns and proper flushing appliances.

The quality of the water supply is apparently good; that is, I know of no cases of disease that have occurred among officers and their families or cadets that could be attributed to the quality of their drinking water.

The number of water-closets and urinals at the post, however, supplied directly from the water pipes, are so numerous that under certain conditions it would seem possible the supply might be contaminated.

UNITED STATES MILITARY ACADEMY, WEST POINT, N. Y., SOLDIERS' HOSPITAL.—*Capt. W. F. Carter:* My inspections have been carefully made, and the following are the points to which it seems most necessary that your attention should be called:

(1) The waste pipe from the kitchen sink in the cavalry barracks is a small pipe (1¼ or 1½ inch), which passes into a large pipe (3½ or 4 inch), extending some few inches above the cement floor; the small pipe simply projects into the large one and has no close connection with it. The large pipe could not be examined beneath the floor, but in all likelihood it is provided with a trap somewhere between the end projecting into the room and the point at which it enters the main sewer or catch basin. At the time of my inspection there was a distinctly disagreeable odor escaping from the large pipe under the sink, and I was informed by the cook and sergeant in charge of the kitchen that they had at times noticed the same odor, especially when hot water was allowed to flow into the sink. It is probable that the offensive gas proceeds from the large pipe under the sink, or it is possible that it comes from the main sewer. The large pipe must inevitably become foul and offensive, since it can never be flushed or scoured by the small stream discharged into it by the 1¼-inch pipe. This should receive attention, as in cold weather, when doors and windows are closed, the air of the apartment may become dangerously polluted.

(2) The waste pipe from one of the kitchen sinks in the artillery detachment barracks has been battered in near the floor so as to compromise the caliber of the pipe. This should be remedied, as the pipe will not be properly scoured unless a full stream of water be allowed to pass through it.

(3) It is recommended that the pit under the privy used by the band men and their

families be thoroughly flushed. This, I think, should be done as often as possible. Daily flushing during the hot weather would not do more than keep them fairly clean.

The examination so far made leads me to the conclusion that the entire sewerage system of the post is defective in construction and decidedly wrong in principle. There may be exceptions in the few instances of recent construction or repairs, in which the quartermaster has done the best that could be done in building up an old and defective system. It is not expected, however, that more can be done by the commanding officer and post quartermaster (apart from some slight changes or improvements here and there) than to repeat the recommendation which they have already made looking to the reconstruction of the entire system.

The house drainage, as far as I have examined, is radically wrong. In the barracks the waste pipes (which are generally lead pipes) from sinks and basins run for a greater or less distance to terminate in brick boxes or into the sewer itself. These waste pipes in some instances extend from a fixture across the entire length or width of the building, and in almost every instance pass directly to and under the floor (be it a plank, brick, or cement floor), by which they are concealed throughout the rest of their course. So concealed, these pipes may become defective and leaky without exciting suspicion. A striking illustration of this was afforded in the set of quarters which I now occupy. Upon the assignment of these quarters to me the quartermaster kindly offered to do all in his power with the limited means at his command to repair and improve the plumbing in the building. The waste pipes from the several fixtures in the house were renewed or repaired down to the floors, at which point they all disappeared from sight, passing under the floors to converge to a common brick basin (outside the building), into which a trapped branch from the sewer opens. After the workmen had gone thus far it was deemed advisable to determine the condition of the pipes under the floors; accordingly they were successively subjected to hydrostatic pressure by closing the outer ends and filling them with water. The first waste pipe tried was that from the kitchen sink, and it was found that the water receded almost as rapidly as it entered the pipe. The leak in this pipe was then looked for, and was found under the floor of the laundry room. The pipe at this point had been nearly cut in two, and by far the greater part of the waste from the sink had been discharged upon the ground under this floor. The soil under the floor space was to a great extent saturated with filthy, offensive matter, and the floor joists and flooring were more or less decayed.

In this particular case the fouling of the soil and decay of the woodwork had gone so far as to emit a decidedly disagreeable odor. Capt. Williams, assistant quartermaster, seconded by the Superintendent, Col. Wilson, was prompt in remedying the evil so far as possible; but he could not of course materially alter the plan of the plumbing without incurring considerable expense.

VANCOUVER BARRACKS, WASH.—*Maj. W. E. Waters:* The recent completion of three buildings, divided into water-closets and urinals for eight companies, provides substitution for all the old pit sinks connected with the barracks, a want that has been felt at this post for a long time. As none of the new water-closets have been referred to in detail in the monthly sanitary reports, I will furnish a brief description of each.

The following were completed in 1887: A water-closet, 21 yards in rear of the cavalry barracks, 6 feet by 18, and 14 feet high, with six iron hoppers and flushing tanks, and one urinal trough, flushed by perforated iron pipes. In the same year two new water-closets were constructed in one building, 18 feet by 19 feet, situated in rear of barracks No. 41. They are of the same size, one-half that of the building, and each contains Mott's iron privy sink, 17 feet long, with patent overflow plug and lever attachment, and one plain iron urinal, 6 feet long. There are six privy stalls in each.

There was built at the same time, and in connection with the new guardhouse, in 1888, a water-closet and bathroom, 20 feet in rear of the guardhouse, connected with it by a covered way, containing a Mott's iron privy sink, one iron urinal, and two bathing compartments, each containing an iron bath tub supplied with hot and cold water.

The following new water-closets have just been completed: One in rear of and contiguous to barracks Nos. 34 and 36, which is 22 by 19 feet, and 14 feet high, with cement floor, divided into three rooms, one for each of the barracks, and each furnished with a Mott's iron privy sink and the usual attachments, and an iron urinal with flushing attachment. Each water-closet contains five privy stalls.

A similar building, divided and supplied as the one just described, has been erected in the rear of barracks Nos. 38, 39, and 40. In the rear of barracks Nos. 45 and 46 is a smaller building, containing two rooms for water-closets and urinals for the occupants of the adjacent barracks, fitted up as the others built this year. These buildings are all of wood with substantial brick foundations, and painted in keeping with the barracks and making a sightly appearance.

WATER SUPPLIES.

The water supplies of the Army have been improved considerably during the past few years, so that medical officers have had progressively less and less to say about them until at last their reports become condensed into a satisfactory conjunction of adjectives such as "pure and plentiful," "excellent and ample," "sufficient and good." Of 79 posts at which reference is made to the water supply, the reports are of this brief but gratifying character in 59, and to only 3 of these has it been considered needful to enlarge by special remarks: (1) At Fort Washakie, Wyo., manure was packed about the distribution pipes to prevent freezing, and in certain instances this packing was carried for some distance under the building, making the ground air in such cases exceedingly offensive. This nuisance was in part abated by using sawdust to replace the original packing. (2) Analyses in the laboratory of the Surgeon-General's Office condemned 2 of the 3 wells at Watertown Arsenal, whereupon the commanding officer had these two closed; but the third is sufficient for the supply of the garrison. (3) Vancouver Barracks, Wash., formerly derived its supply from the water mains of the town and suffered by the increase of the civilian settlement without a corresponding expansion of the water system.* It is now independent of the municipal water-works, having 2 artesian wells, 2 pumps with a combined daily power of 650,000 gallons, a tank of 50,000, and a reservoir of 626,000 gallons; the last two are connected with each other, with both pumps and with the distribution pipes, so that if either well or either pump becomes inefficient the other continues the supply, and should both fail the mains may be filled from the town supply.

In 7 more of the 79 reports the water is said to be good; but, although in some of these instances, as at Fort Bennett, S. Dak., it is affirmed to be also ample, a doubt arises as to its sufficiency, inasmuch as it has to be wagoned from its source for distribution. Fort Bennett derives its ample supply from the Missouri. The water wagon is still an institution at Fort Sully, S. Dak., Eagle Pass, Tex., and Fort Du Chesne, Utah. It brings the supply of Fort Brady, Mich., from the city waterworks, and distributes from the artesian wells at Fort Sheridan, Ill. It also brought a supply of spring water for drinking at Fort Verde, Ariz., but that post was abandoned in December, 1890, and there are now but six posts at which the wagon is reported as in use.

In seven of the seventy-nine cases the supply is said to be insufficient, but in only one of these is a slur cast on its quality. (1) The exceptional instance occurs at Fort Schuyler, N. Y., where the cisterns and wells which furnish the water of doubtful wholesomeness are now being replaced by an artesian well. Rain water is always a good water if proper precautions are taken for its collection and storage. Its sufficiency depends upon the preservation of the proper relations between the garrison to be supplied on the one hand and the shedding surface in connection with the minimum rainfall on the other. When attention has been paid to all these conditions, as at Fort Gibson, Ind. T., and Jackson Barracks, La., the water is reported as good and plentiful, (2) but at Fort Barrancas, Fla., some of the points in relation to quantity have been apparently neglected as the supply has been deficient; at no time has there been a sufficiency for bathing. It has been suggested that a plentiful supply could be easily piped from springs about half a mile distant from the post or by sinking an artesian well, for such wells have been a success in Pensacola and its vicinity. (3) The supply for Boisé Barracks, Idaho, was formerly wagoned from the Overland Hotel at Boisé City. Recently a main was laid from the waterworks, but this does not give a sufficient supply. (4) The drain on the pipes running through the city of St. Louis, Mo., reduced the water supply of Jefferson Barracks so that at times in June no water could be drawn from the hydrants; but as it was found that the pressure increased at night a sufficiency was obtained to give an imperfect flush to the closets and sewers and to permit a partial supply to be stored up for use on the following day. (5) Fort Leavenworth, Kans., is similarly dependent on its neighboring city for its water. On account of the costliness of the present supply, its liability to interruption by the needs of the city, and the possible danger of its contamination by the sewage of the post, which flows into the river above the intake, Colonel Woodhull suggested that it would be in the interest both of economy and sanitation to provide reservoirs and pumps for this important station. His recommendation meets with the approval of this office. (6) At Fort Assinniboine, Mont., the supply from Beaver Creek is so low during the autumn months as to be a source of much anxiety. Capt. La Garde thus describes the condition of affairs:

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* Vide report for 1889, p. 83.

On account of the low stage of water in Beaver Creek the water contains a great deal of organic débris. Since the latter is a fruitful source of the malaria which prevails every autumn, I would recommend that the water for drinking purposes be boiled, aërated, and mixed with a liberal amount of ice. Ten per cent of the admissions this month are due to fever and ague.

In August he remarks: The question of the water supply for this large and important post demands the immediate attention of the authorities. In order to maintain the normal volume of water in Beaver Creek I recommend the construction of a number of dams at favorable points. By restraining water in the creek bed the underlying soil will remain more or less impermeable in dry seasons, like this, and the water from the mountains will reach the source of supply the year round. There was a dam thrown across the creek bed about 7 miles above the post two years ago that served a good purpose during last season. It was as late as the latter part of November before water came down in the dry season of 1885. Last year the season was again dry and the water came down during the latter part of September, as soon as the frost had destroyed all vegetation. The early appearance of the water last year as compared to the time it made its appearance in 1885, is, in my opinion, to be explained by the detention of water above the 7-mile dam. The bed above this point remained wet constantly and when the water came down it made its appearance near the source of supply at once, instead of being consumed on the way to fill the cracks and crevices that must have obtained in a dry bed. The volume of water can be increased only by surface and artesian wells. Several of the former kind are now in use, but the potability of their water is questionable since they are prone to cause bowel troubles. The commanding officer informs me that he has recommended an artesian well. If we should be so fortunate as to hit upon good drinking water from this source, the water supply of the post will then remain solved.

In September he states: Notwithstanding a number of good soaking rains during the early part of the month, the creek bed is as dry as it has ever been. The Chinaman's spring referred to in my last report, upon which the command has depended for its drinking water, is about to run dry. It is safe to say it will have stopped flowing two weeks hence. Unless active steps have been undertaken to increase the volume of water for this post, I would recommend that a board of officers be appointed to thoroughly investigate the subject, and to recommend what measures are best to insure a permanent water supply. No pains should be spared and no time lost in the inauguration of active steps to remedy this alarming state of affairs. The time is ripe for a full understanding of our situation, and I trust that a board may be sent to judge for itself. A plentiful supply of good potable water stands preëminent in determining the welfare and health of a community, and for that reason I deem the slender thread upon which we now depend to be fraught with danger.

The post commander in forwarding the preceding report says: "The flow of water from the spring upon which the post has for the past two months depended for its water supply is diminishing perceptibly, but by managing to utilize more of the flow and possibly a further development of the spring, it is hoped we may get along until the creek commences to flow."

The sanitary report for October contains a sketch showing springs in the vicinity of the post. In this report Assistant Surgeon La Garde remarks: "The water from the Chinaman's spring is practically exhausted, and because of its liability to contamination, recommendation was made to haul water from a distance of 2¼ miles above the present source, where a good stream is now flowing. * * * The prospects of abundant potable water at our original source are very good." Capt. and Assistant Surgeon Walter W. R. Fisher reports that there is a good flowing stream less than 3 miles from the post. In 1886 the water reached the post about November 28.

The seventh and last post at which an insufficiency is reported is Fort Warren, the most important defensive work in Boston Harbor. During the month of July the cistern supply gave out and it became needful to purchase water in Boston, transport it by boat to the island, and transfer it to the various cisterns by means of the post fire engine. The insufficiency at this important post could not be expressed with greater emphasis than by the statement of its failure when occupied by a merely nominal garrison, notwithstanding the exercise of the greatest care in husbanding its resources. Concerning this Capt. McCreery observes:

> Money is being expended at present for the purpose of increasing the existing supply, but the work has been planned without a proper appreciation of the physical problem to be solved, and the expenditure when made will be without result. The use of sea water, by means of an extensive condensing plant, or the introduction of the city water, will be the only satisfactory method of overcoming the difficulty, and the preference should be given to the latter method. The city mains already extend to Long Island, thence to Galloupés; and thence to Fort Warren is a matter presenting but few engineering difficulties, and the water supply would be assured. The question is a grave one and deserves earnest consideration.

Doubt is thrown upon the quality of two of the seventy-nine supplies. (1) The camps and other settlements in the cañon above Fort Douglas, Utah, continue to interfere to some extent with the purity of the small stream which feeds the reservoir. (2) The water supply of Fort Apache, Ariz., is led from the creek, by a ditch, to the pump. According to Capt. W. C. Shannon—

> The ditch is partly filled with mud and washings from the hill along which it passes. In many places the flow is obstructed by green, slimy moss, such as is seen in stagnant pools and frog ponds, lodged wood, twigs, and decaying leaves. It has been reported that the Mexicans, who have been making adobes along this waterway, use it for washing themselves and their clothing. This ditch also receives from the creek the irrigation water from the company gardens and Indian farms. Considering the filthy condition of the ditch, the inflow of polluted water from the gardens, etc., the uses to which the Mexicans put the water on its way to the post, it will be seen that the supply is unclean, unwholesome, distasteful, and disgusting. It is recommended that the ditch be at once cleaned, to remove all fungus growths and decaying matter, and to give the water a swifter current; that the Mexicans be moved to where they can not make use of the ditch as a lavatory and laundry. As to drainage from gardens and farms, it is impossible to suggest a remedy so long as the water supply is taken from the creek, as at present. The construction of the proposed supply (McMurray's system) should be hastened, that a wholesome water may be supplied to the many people whose health is jeopardized by the present conditions.

Three of the seventy-nine waters have been charged with the production of sickness: (1) At Fort Wadsworth, N. Y., the water, generally good, becomes brackish in June and December from admixture of sea water by high tides. At these times it is often unpalatable and causes diarrhœa. (2) The saline matters in the shallow wells dug in the bed of the San Carlos River, Arizona, occasionally induce diarrhœal attacks. (3) At Fort Elliott, Tex., there is stronger evidence of the production of disease by the water supply. The water was wagoned from a well, a spring, and from Sweetwater Creek. The well was near some old and disused privy vaults in the vicinity of the hospital. Typhoid fever appeared at the post and ceased after the development of thirteen cases on closing up the well.* This post was abandoned October 13, 1890.

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*Vide *supra*, page 27.

FOOD AND COOKING.

The reports of the past year appear to show that the United States soldier has, as a rule, a sufficiency of good food properly cooked and presented in an inviting manner in the company mess halls; for when defects exist in relation to the ration or its preparation they are not usually overlooked by medical officers in their sanitary reports. A great improvement in the diet of the men has been made within the past year, so that complaints are infrequent and defects are due to local causes.

At Fort Stanton, N. Mex., complaints were made as to the quality of the beef issued during the winter and spring. The medical director of the department, after a personal examination of this post, became satisfied that in many instances the complaints were well founded and the beef of such quality as would warrant its rejection. Nevertheless, such beef is often received by the responsible officers, although provision for its rejection is found in the body of the contract made by the subsistence department. Boards of survey in some cases seem unwilling to mulct the contractor in the sum he would lose were his beef rejected and other beef purchased in open market. It is said in certain cases that if the poor beef is rejected the troops would be for that issue deprived of their meat ration because of the want of a market in which to buy, and therefore the contractor's supplies are accepted. This might be an excusable course where a single issue of beef is concerned, but it is not so where there is ground for continuous complaint. In such case a market might be looked for before hand.

If people in the neighborhood became aware of the facts and were told that on the next occurrence of the kind the beef would be rejected and other beef bought in open market, it is probable that some one would be found to make provision for the contingency, furnish the beef wanted, and charge such price as would compensate him for the risk he ran in providing it. The difference in price thus paid for a few times by the contractor or his sureties, as a penalty, would be the surest means to induce him to fulfill his contract.

At Jackson Barracks, La., the character and cooking of the ration were not considered satisfactory. The men complained of the cooking and of the insufficiency of the meat supply. The bread also was not good; the flour used had been kept in the bake house for several months and the warm moist atmosphere had caused changes in it that prevented the making of sweet, wholesome bread. The post commander, commenting on these criticisms, acknowledged the absence of competent cooks, and explained that the want of ice is the cause of much loss in the food supply. He said:

> The men of both companies have been getting all their rations and more too, for the company funds of both batteries have been constantly reduced by the purchase of food. In other words, the purchases of food have been greater than the savings. This can not last long, and as rations are limited in quantity and kind the men will have to abide the situation or else contribute to their mess fund as many other organizations do who who are stationed in the South. As soon as it has been in operation long enough the increase of the ration by 1 pound of fresh vegetables will, I think, mend matters.

This is the only suggestion of a contributed mess fund to be found in the reports save in those from Alcatraz Island, Cal., and camp at Eagle Pass, Tex., where exceptional conditions are present. Not long ago at many of the posts in Texas the companies had to eke out their supply of vegetables by assessment on the members. The post surgeon at Fort

Ringgold, Capt. W. F. Carter, explains the cause of this improved condition. He says:

> We can but note the great benefit arising to the enlisted men under modern and progressive methods of dealing with the ration. The return of the savings upon bread to the company funds and the restriction of these funds to the purchase of food alone have secured a much better diet, and at no personal cost to the men as, in former years, when almost throughout the department the men paid for their potatoes from their private means. Another source of revenue to the food fund has resulted from the establishment of the post canteen. * * * The question, at least, of the means to purchase a suitable diet seems settled, and it can not but be sincerely hoped that the canteen is a permanent establishment in our Army, for it has brought a large measure of contentment and has proved an unexpected source of much needed revenue for the improvement of the diet of the troops.

The conditions at Alcatraz Island were reported by Capt. Dietz as follows:

> The meat furnished to the various organizations has been of fair quality; it is probably as good as can be expected for the price, 5.36 cents per pound. One shipment to the prison, however, was condemned as unwholesome, a large abscess of the hip-joint being found by the board of survey. The bread issued is good. A constant and general complaint is made by prisoners that they do not get enough to eat, and my observation leads me to believe that this is a just one. The enlisted men in the batteries state that the regulation ration is insufficient; the proportion of pork is too large while that of beef is too small; and that in order to get enough to eat they have to maintain for each battery a mess fund, into which every man pays monthly from 50 cents to $1, the earnings of certain billiard tables being also covered into this fund. In connection with this, it is to be remembered that there are no vegetable gardens at the post, the products of which form such a desirable addition to the dietary of more favorably located garrisons.
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> The prison mess not having, as formerly, an income accruing from the proceeds of the shoe shop, tailor shop, carpenter shop, etc., is now limited to the bare army ration.

Later in the year Capt. Dietz expressed the satisfaction which the issue of vegetables by a recent order had given to the men of this garrison.

At Fort Niagara, N. Y., the local cause which interfered with the satisfactory character of the ration was the absence of a cellar under the bakehouse. Maj. A. C. Girard reported thus:

> The bread is improving since a better grade of flour was obtained, but it can never be really good so long as the present makeshift of yeast cakes takes the place of properly fermented potato yeast. The objection seems to be the irregularity of the temperature in the rooms where the yeast is allowed to work, in absence of a cellar. That there should be no cellar in a newly built bakehouse is a strange oversight, but I believe the matter can be remedied by digging under the foundation from the outside. A cellar 6 by 6 by 6 would be large enough and remove the last impediment in the preparation of wholesome bread.

At the camp at Eagle Pass, Tex., the chief defects in the food supply appear to have arisen from the spoiled condition of certain of the canned supplies which were inadequate originally, a nine months' supply having been estimated for on the strength of the small garrison at the time the requisition was made, while at the time the supplies were being used the strength had been materially increased. The report of the post surgeon, Capt. Paul Clendenin, is as follows:

> The rations of the men are good and are well cooked, being supplemented by vegetables from the troop garden at Fort Clark, and potatoes and onions purchased from the subsistence department. The pork is rarely eaten by the men, indeed it is rarely drawn from the commissary, being turned in at once, and there it remains to be issued and sold back again and again until it spoils, despite the utmost care for its preservation, and when it becomes offensive it is presented for the action of the board of survey, and later of an inspector, and thus disposed of. I venture to say that pork is a more expensive part of the ration than is bacon, which, by the way, is relished by the men, while the pork is repugnant to the vast majority of them, for the pork for the most part is finally condemned and thrown away. It is a matter of regret that there is no post garden at this camp, but the whole reservation lies on high ground back

from the river, and nothing will grow here without irrigation. The water supply is insufficient to furnish water for that purpose, nor is there material to build a fence around the garden. The hospital corps live very poorly here, and are compelled to contribute to their mess, and so do also the troops. A small number of men with but few sick find it very hard to manage the ration to advantage. The hospital corps gets no fresh vegetables but the few that are given them through the kindness of the troop.

The following remarks on the new mess hall at Jefferson Barracks show the advantages which a large garrison has over a small one, although both are provided with the same ration per man:

> The new mess hall is now in successful operation, and is a decided improvement over the former company mess system. The food is well cooked and neatly served. The whole command sits down to the tables at the same time, without any confusion, and the uniformity in kind and quantity of food does away with any complaints as to the inequality or cooking which so frequently occur in the separate messes in companies serving at the same post.

General mess halls have been built and the messes are in operation at Davids Island, N. Y., Columbus Barracks, Ohio, Jefferson Barracks, Mo., and Fort Riley, Kans. The advantages of a large mess over a small one in improving the diet are evident when other things, such as the general management, cooking, and attendance, are equal. Inasmuch, however, as it is easier to provide capable stewardship and good cooks for small than for general messes, the chances are against the ultimate success of the latter, unless special care or means are taken to insure that the men on these important duties are fully qualified by previous training and experience. Maj. John Van R. Hoff gives expression to these views in a recent report, which shows the defects of the system as manifested at Fort Riley, Kans.:

> Attention is respectfully invited to the fact that, while the quality and quantity of food supplied the command is above criticism, the cooking is not. As general messes are doubtless to become the custom at large posts, it would seem that sufficient experience must have by this time been had to justify them. But such experience certainly has not been gained at this post. After a trial of nearly two years I believe no man here can say that the advantages of a general mess outweigh its disadvantages; and I am sure I voice the opinion of every officer and man of this command when I assert that here at least the new system has not equaled the old.
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> This certainly has not been due to any lack of effort upon the part of the officers having the mess hall in charge, for no men could have labored harder than they in the accomplishment of a thankless task. but it is due, I believe, to a want of knowledge how to properly handle the enormous masses of food needed to feed a command of this size. To feed even fifty men requires knowledge and an effort. Multiply that number by ten and then not only adaptability to the work is needed but long experience as well. If there are to be general messes, there should be established a class of men—make them noncommissioned officers, if needs be—whose duties will correspond to those of the steward of a large hotel; there must be cooks, trained in the manipulation of large masses of food, there must be waiters. In a word, every general mess hall requires a corps of attendants which can not and should not be furnished by details from the command. The mess hall should indeed be a school of cookery, but the teachers should be experts and the scholars willing learners, not forced by the inexorable mandate of the company roster.

CLOTHING.

There are not many complaints concerning the clothing in the reports of this year, and such as are found are merely repetitions of those that have appeared frequently heretofore in the annual reports of the Surgeon-General of the Army. From Texas, Arizona, and other hot climates comes a call for lighter underclothing, and from the Dakotas, Wyoming, and the higher altitudes of the South, a call for drawers of a heavier nonconducting material. Capt. Clendenin, at Camp Eagle Pass, Tex. denounces the undershirt as too heavy and coarse to be comfortable in the climate of Texas for nine months of the year, and suggests that during the three other months a light woolen shirt of finer quality than that now issued would not be too thin, inasmuch as the overshirt worn is heavy. A considerable number of the men purchase light cotton shirts for use during the greater part of the year, and this constitutes a serious drain on their scanty resources. Capt. P. E. Egan, from Fort McIntosh, Tex., presents similar views regarding the undershirt, adding that the Quartermaster's Department should furnish a gauze undershirt for use in Texas, as the irritation of the knitted undershirt is intolerable to most men, and keeps the skin in perspiration for months at a time. So also from Fort Gibson, Ind. T., Capt. Owen calls for lighter drawers and flannel shirts, while Capt. N. S. Jarvis realizes that there is something inconsistent, not to say unreasonable, in requiring troops at Fort Verde, Ariz., to wear canton flannel drawers and heavy woolen shirts and socks, such as are issued to those serving at posts in the far Northwest for use during the times that the cold waves are materializing. Like Capt. Clendenin, he states that most of the men purchase comfortable underclothes out of their slender income. On the other hand, Maj. Lauderdale, at Fort Ontario, N. Y., in giving credit to the Quartermaster's Department for furnishing clothing of good materials and suitable for winter wear in the cold and damp climate of his post, can not refrain from the suggestion that the drawers should be of heavy woolen stuff. Acting Assistant Surg. Holland and Capt. C. F. Mason echo this suggestion from Fort Pembina, N. Dak., and Fort Washakie, Wyo., respectively, the latter asserting that the insufficient protection of the limbs by the present garment is a prime factor in the production of rheumatism; and Maj. P. J. A. Cleary coincides in these views from Fort Wingate, N. Mex., adding that attention has been frequently invited to this subject.

Maj. Cleary is correct in his statement. If the records be examined it will be found that the medical officers of the Army have steadily and persistently denounced the idea of a uniformity that would give the same clothing, and insist upon its being worn, to troops on the burning sands of southern Arizona and to those in the zero temperatures of the Canada frontier. Col. Vollum has said: *

> The subject of the clothing of troops in this semitropical region is a matter that evidently has not received the serious attention that its importance demands. No argument is needed to show that health requires cool, light clothing in a climate like that of the Lower Rio Grande Valley, which is one of the hottest regions in the world occupied by white troops.
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> In the early days of English occupation of India, the military commanders remained for a time stiff-necked against any departure from the home woolen uniform, which, owing to prejudice against change, was worn for some time even in southern India; but the suffering, inconvenience, and depressing effect of the heavy clothing, only suitable for the climate of England, in time caused a reform, and quite naturally the dust-colored light cloth of the natives was first put to use, but this gave way to white drill trousers and calico jackets, which are now used for fatigue purposes throughout Lower India, British West Indies, West Coast of Africa, Egypt, Hongkong, and all other points occupied by English troops in tropical and semitropical countries. Holland, Germany, France, and all other nations clothe their troops serving in hot countries about in the same manner as the English do in such climates.
>
> The United States stands alone in the measure of forcing its troops to wear the same uniform during all seasons and in all latitudes; and in the twenty-four degrees embraced within the boundaries of our country there are some places as hot as any occupied by white troops anywhere in the world. In this tardiness in adapting the clothing of our troops to the climate, we stand about where the English did in the first days of their occupancy of India. * * *
>
> Complaints of the oppressiveness of the heavy woolen uniform in this region in summer date back in my memory to 1853-1856, when I served in this State. At that time the unsuitableness of the uniform, which was about as heavy as it is now, was a constant topic for grumbling and discontentedness.

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* Report of the Surgeon-General of the Army, 1887, p. 79.

Much has been gained since the *ante bellum* dates to which Col. Vollum refers: at first in the North and Northwest, where the intensity of the winter's cold called with appreciable urgency for the needful protection from it, and afterward in the South, where more slowly the necessity for the adaptation of clothing to climate was recognized; and now there seems little remaining to be accomplished other than to give a practical response to the requests of these medical officers for thinner and less irritating underwear in the South and a better protection for the lower limbs in the North. No doubt this will speedily be effected, and the Army of the United States, although scattered over so many degrees of latitude, with altitudes reaching as high as 7,500 feet above the sea level, and with temperatures as low and as high as those to which the troops of *all* other nations are exposed, will have a schedule of clothing which will be appropriate for every one of its subordinate commands.

Another point which has been frequently referred to by medical officers is the summer head covering, particularly in warm climates. Capt. Havard, from Fort Buford, N. Dak., states that—

> In my opinion the summer helmet could be improved in shape. The front brim or visor is too short to give such protection to the face as it should.

And Capt. Clendenin, at Camp Eagle Pass, Tex., goes more into detail on the subject:

> I desire to compare the regulation white helmet issued to enlisted men with a Chinese pith helmet worn by the officers at this camp when not on duty. The great advantage of the latter is the large crown with the distance from the head band to the wall of the helmet, and the wide brim shading the face and head all round. The disadvantage of the regulation helmet is that it does *not* shade the eyes, face, and neck; and the men do not like to wear it, judging from my own observation that they seldom do except when compelled to. The pith helmet is not as serviceable as the cork one, as it does not stand wetting, but a coating of shellac or other varnish would add considerably to its durability. A cork helmet with wider brim and greater air space would be an improvement on the present one, and would not weigh over 7 or at the most 8 ounces. As a rule the men when permitted to choose wear straw hats in preference to the white helmet, and, wherever I have served, commanding officers have not insisted on the helmet being worn except perhaps when on duty, knowing how uncomfortable a head gear it is, with *no provision for shade to the eyes* in the hot glare of the sun in Texas, not to mention the stiffness due to the small space between the head band and the unyielding wall of the crown. Such a helmet as I have suggested is, I know by personal experience, infinitely more comfortable than the regulation helmet, and is, from a sanitary point of view, better than either the present helmet or the straw hat, besides presenting a more soldierly appearance than the latter.

On this the post commander remarks:

> The white helmet is not what it might be, and is popular neither with officers nor men. *It has all the faults mentioned*, and is easily soiled and spoiled by one rain. Straw hats are light, cheap, and afford shelter from the sun. The men at the camp all wear the same pattern.

The italics in the above extract are not in the original, but have been placed there to show how they bear out the views of Capt. Havard. Looking at the page of the report of the Surgeon-General just cited, we find Capt. W. F. Carter stating that—

> The helmet would be the best covering for the head I know for this climate if it were made after the pattern of the English [Indian] helmet, but as issued to our troops it is cut too short in front and rear. It does not protect the face and neck.

And picking up the next report Capt. Macauley is found to express the same views:*

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* Report of the Surgeon-General of the Army, 1888, p. 116.

> They also wore straw hats while I wore the regulation white helmet, which, although as cool as the straw where the head proper is concerned, is much heavier, and by reason of its faulty construction does not give the same protection to the face, ears, and neck.

These citations suffice to show that the defects of the helmet have been pointed out long before Capts. Havard and Clendenin referred to them during the past year. They should be remedied.

Two references to the regulation blouse are found in the reports: Maj. Pope, at Whipple Barracks, Ariz., considers that it is fitted so closely to the body as to impede respiration during exercise, particularly at high altitudes (his post is 5,340 feet above the sea level) and he suggests that lung expansion and abdominal movement should be unimpeded during exertion to avoid heart strain. He therefore recommends that during active drills, bayonet exercise, etc., the blouse be officially loosened about the neck, chest, and abdomen, and that the waist belt be fitted low down about the hips. Col. Woodhull's suggestion may, however, come in place here advantageously. He says:

> The practice of allowing the guard to serve in their blue shirts, without coats, during the hot season, has conduced greatly to their comfort and is to be commended from a sanitary point of view. I hope the day may come when a shirt dress will supplant every form of coat for the rank and file under ordinary conditions of weather.

HABITS, CLEANLINESS, ETC.

Little is said in the sanitary reports concerning the habits of the men. More may be learned from a study of the prevalence of alcoholism and venereal diseases in the Army and at the various military stations than from the special reports of medical officers. One thing is certain, that drunkenness is on the decrease among our troops. The average annual rate per thousand of strength during the decade 1879–'88 was, among the white men, 62.22; during 1889, it was 45.64; and during 1890, 44.45. The colored soldier is seldom on sick report from this cause; his average annual rate during the decade was 4.42, the rate of last year was 2.07, and of the present year 5.59. The admission rate for venereal diseases among the white troops during the decade was 77.33 annually; it was above this average last year, but fell during 1890, to 72.02. Looking over the past twelve years there is seen to have been a manifest decrease in the prevalence of these foul and disabling disorders. The highest admission rate at any of the larger military posts was 462 per thousand men in 1889, and 380 in 1890. The number of men discharged from the Army annually on this account during the decade was 101.6; the number discharged in 1890, was only 71.

Every medical officer who refers to the canteen system approves of it with the exception of Capt. R. P. Ball, temporarily in charge at Fort Riley, Kans.:

> The post surgeon is yet skeptical as to the sanitary value of the canteen. He has treated more cases of alcoholism and has sewed up more cut heads in a given time since its establishment than previous, and this does not argue in its favor. He is unable to see how giving the soldier double the quantity of beer for the same money can conduce to his sobriety and efficiency.

Capt. Ball's remarks would have more value as against the canteen if Fort Riley was a post with a reputation for alcoholism; but as a matter of fact it had just six cases of drunkenness during the year in its garrison of 649 men, or an admission-rate of 9.35 per 1,000 as compared with the average rate of the Army, 40.73. Only 13 posts had a better record in this respect, and 108 had a worse. (See Table XVII.)

These facts appear to argue in favor of the canteen, notwithstanding the views of Capt. Ball.

On the other hand, there are many such reports as the following:

FORT WINGATE, N. MEX.—*Maj. P. J. A. Cleary:* The habits of the men are generally clean and soldierly. Since the post trader was prohibited selling light wines and beer intemperance has markedly increased.

ALCATRAZ ISLAND, CAL.—*Capt. W. D. Dietz:* The canteen recently established is an appreciated innovation which will render the enlisted men more contented with the monotonous life at this rather circumscribed and lonely station.

FORT BENNETT, S. DAK.—*Acting Assistant Surgeon J. B. Ferguson:* The canteen system at this post, with the authorized sale of beer, has been a success. There has been no drunkenness from it, and I believe it makes the men more contented.

FORT BUFORD, N. DAK.—*Maj. Valery Havard:* There were four cases of alcoholism and four of venereal disease under treatment during the same month, the greatest number of both classes of cases recorded in any month this year. This sudden increase denotes a deterioration of habits due in my opinion to the exclusion of all alcoholic drinks from the canteen.

FORT HUACHUCA, ARIZ.—*Maj. J. H. Patzki:* The canteen has a beneficial effect upon the habits and contentment of the men.

FORT LEAVENWORTH, KANS.—*Maj. A. A. Woodhull:* It is worth remarking that there have been more cases of alcoholism (never very common here) under treatment within the past six weeks than for a long time before. Whether this has more than an incidental relation with the stoppage of the sale of beer in the canteen I can not tell.

FORT NIAGARA, N. Y.—*Maj. A. C. Girard:* A remarkable change has taken place in the habits of the men as to sobriety since the establishment of the canteen. Signs of intoxication are rarely to be seen, and the guardhouse is without occupants.

CAMP POPLAR RIVER, MONT.—*Lieut. J. D. Poindexter:* I am of the opinion that in this respect the influence of the canteen has been for good.

FORT WASHAKIE, WYO.—*Lieut. Charles T. Mason:* Though it would be difficult to show any direct effects of the canteen upon the health of the command, yet I am convinced that indirectly its influence has been favorable by giving the soldiers a place where they can meet socially and without unnecessary restraint, where they can obtain light refreshments when fatigued, and by keeping them from other objectionable places. I believe their habits and health are both improved by the existence of the canteen.

To determine the influence of the canteen on the habits of the men so far as the statistics of alcoholism would show it, the medical records of our military stations for the years 1889, 1890, as given in Table XVII, and 1891 up to June 30, were examined. Little value is to be attached to the record of a single post, as the canteen system may there be modified by more powerful local conditions, as in Kansas, according to Maj. Woodhull, by prohibition; but the aggregates of the Army might be expected to give testimony of some value. These aggregates appear to sustain the views of our medical officers who express themselves as in favor of the system. They show that the canteen has relieved our military posts of one-third of the cases of alcoholism that formerly tended to the demoralization of the individual, infractions of discipline, assaults, injuries, and death. They are presented below, together with the falling rates of a few of the posts. At Willets Point, a large post which has had a bad reputation for drunkenness, the impression made presumably by the canteen is distinctly marked.

	Annual admission rate for alcoholism per thousand of strength.		
	1889.	1890.	1891.
Posts with canteen	42.95	41.76	39.82
Posts without canteen	54.78	61.04	60.50
Willets Point, N. Y	272.97	157.50	70.46
Fort Mackinac, Mich	197.52	127.66	70.18
Fort Spokane, Wash	118.72	80.00	50.96
Fort Wayne, Mich	44.95	113.74	41.16
Fort Hancock, Tex	130.43	40.82	39.22
Vancouver Barracks, Wash	104.44	73.81	31.96
Fort Hamilton, N. Y	78.95	35.36	25.52
Fort Bliss, Tex	93.22	16.26	18.24
Boisé Barracks, Idaho	79.22	28.57	16.80
Fort McIntosh, Tex	100.77	30.77	13.88
Presidio of San Francisco, Cal	114.05	28.57	8.68
Davids Island, N. Y	25.91	11.52	7.54
Columbus Barracks, Ohio	20.03	17.93	3.54
Jefferson Barracks, Mo	4.72	4.93	0.00
Mount Vernon Barracks, Ala	137.92	45.05	0.00
Fort Sherman, Idaho	40.65	77.21	0.00

From a few posts come complaints of the inadequacy of the facilities for personal cleanliness; but from the very infrequency of these complaints it will be appreciated that as a rule military stations are satisfactorily provided in this respect.

Camp Eagle Pass, Tex.—*Capt. Paul Clendenin:* There is but one bath tub for the troop of 50 or more men, and no means of heating the water. I am confident that the requirements of one bath weekly is not obeyed by the men, for some have come to me on sick report that to my positive belief have not bathed for a month. Moreover, I do not think a weekly bath sufficient for a cavalryman who grooms his horse twice daily and works about a dusty corral. He should be required to bathe at least twice a week in winter and every day in summer; and facilities should be provided for a daily bath for all if they wish. I would respectfully suggest that two additional tubs be provided, with a barrack stove and large water heater to be placed in the bath room, and that it be made the duty of the noncommissioned officer in charge of the quarters to see that the fire is kept up during the winter and during northers; that the water heater be kept filled, and that the men bathe frequently. I know that the average cavalryman despises the idea of bathing in warm water, thinking it effeminate; but it is difficult, if not impossible, to take an efficient bath hastily and shivering, and I am confident that men will bathe more frequently and more carefully when they can do so comfortably. An interesting point was brought out in my inquiry regarding bathing. It appears that many of the men will take a washtub and give themselves a sponge rather than go into the general bath tub which has been used by men with venereal diseases. On this the post commander indorses as follows: Until there is a better water supply I see no way to have better bathing facilities. * * * The tub in use exhausts the water supply, and this is the reason why the other tub was turned in. * * * The men bathe in the river, a thing I have encouraged, for every soldier should not only be able to swim, but have confidence in himself in the water. Noncommissioned officers in charge of squads have special instructions concerning baths and washing the feet, and although there may have been some cases of negligence I have not detected them. As a whole the men of this troop are the neatest and cleanest soldiers I have ever seen, and no sickness from any lack of bathing has come to my notice.

Fort Du Chesne, Utah.—*Capt. C. E. Price:* Very poor accommodations for bathing. Lack of bath tubs, lack of conveniencies for warming water, and room, and lack of privacy makes bathing uncomfortable, so I have no doubt it is frequently neglected. If the proposed waterworks, including bath tubs, are not to be put in very soon, tubs should be procured for the company at once.

Fort Logan, Colo.—*Capt. Charles Richards:* In the new guardhouse the bathing facilities are of but little use in cold weather, there being no means for heating water. The cleanliness of the prisoners is a sanitary necessity, and a hot-water supply should not be regarded as a luxury. All deserters who have been brought to this post have been exceedingly dirty and generally infested with vermin. That they may be properly cleaned they must be taken to one of the company bathrooms, where hot water is obtainable, thus inflicting injustice upon the men of the companies, who run the risk of becoming infested with vermin. Some arrangement for supplying hot water could easily be introduced.

NEWPORT BARRACKS, KY.—*Capt. H. J. Raymond:* The bathing facilities for the enlisted men are wholly inadequate, there being about 80 soldiers dependent upon two bath tubs in the company quarters. Two additional tubs are needed. The hot-water supply is deficient, the water having to be heated in an ordinary wash boiler at times when the range is not otherwise occupied. The practical result is that bathing is neglected by many. Cleanliness of the skin conduces largely to the health, comfort, and contentment of any company or command. A boiler attachment to the kitchen range or ranges, with delivery pipes to the bath tubs, is recommended.

FORT PORTER, N. Y.—*Capt. E. F. Gardner:* The bathing facilities are not as good as they should be. In this climate a cold bath is an impossibility for nine men out of ten. The present facilities for heating water for bathing by boilers connected with the company kitchen stoves are not sufficient, as they can not furnish enough of hot water for more than two or three baths in the course of a day. Some kind of boiler for heating water should be put up in the barracks so as to furnish at all times an unlimited supply of hot water for bathing purposes for both companies.

FORT WASHAKIE, WYO.—*Lieut. C. F. Mason:* I desire to invite attention to the absence of any facilities for bathing in the company quarters. The hot springs, 2 miles away, are resorted to by the men for this purpose, but the distance is so great that they are not used with sufficient frequency during the winter months.

FORT BENNETT, S. DAK.—*Acting Assistant Surg. J. B. Ferguson:* To the need of a good bathing room for the use of the enlisted men attention is invited. The one in use, although better than none, is so small that there is scarcely room in it to turn around, and being only a shed attached to the quarters, built of old material and without any plastering, it can not be otherwise but cold and drafty in winter, and liable to increase the number of men on sick report with coughs, colds, etc.

FORT DOUGLAS, UTAH.—*Maj. W. D. Wolverton:* Additional bath tubs are required for the use of the troops at this post, placed in properly selected rooms. At present only one bath tub is provided for each company in any small alcove or open room available in the barracks, and usually protected from intrusion only by a small cloth screen. During winter the bathing places are not sufficiently warm to protect the men from dangerous exposure. Frequent bathing is necessary to the health and comfort of soldiers, and to insure this two bath tubs should be provided for the use of detachments or companies of more than 30 men, and three where companies or batteries number more than 50 men. On this report the medical director remarked:

> Bathrooms should not be attached to separate company barracks in our large and permanent posts. It is much wiser and more economical to provide this facility in a building apart where the administration can be concentrated and direct. Such a building should, in my opinion, contain a swimming pool, and for the most part the ordinary bath tub should be dispensed with. In its stead the bath cell and water jet should be used both as more cleanly in practice, simple in design, and economical in use of water.

I strongly recommend the establishment at each post of a systematic course of athletic exercises to improve the physique of the men. Military drills have little influence in perfecting the physique, and after a time they become monotonous, and being looked upon as a task, fail to interest the men. Only one medical officer during the past year has referred to this subject in his reports, although I am aware that it has occupied the attention of many.

Lieut. CHAS. F. MASON, *Fort Washakie, Wyo.*, says: "During this winter systematic exercise in the gymnasium has been at times compulsory, and though the course was not maintained for a sufficient length of time to show any very marked change in the physique of the men, yet I am confident that during these periods there was much less willingness shown in appearing upon sick report. A compulsory graded course in gymnastics, under the supervision of a qualified officer, would be excellent preparation for the summer marches. Such a course should embrace walking, running, leaping, vaulting, and swimming, besides the exercise with fixed apparatus. It could be held through the winter and spring months, and would form a most useful and agreeeable substitute for some of the monotonous and tiresome drills. There can be no doubt that such a course would result in a marked improvement in the physical condition of the soldier, and also in his cheerfulness and contentment. The modern soldier is liable to sudden calls for severe and prolonged strain, and he should be fitted for such emergencies by the development of the hard muscles, supple frame, and increased heart and lung power which properly regulated gymnastic exercise would give him."

The need for the systematic development of the physique of our troops is shown with emphasis by certain measurements of 161 colored men, 80 of the Tenth Cavalry, and 81 of the Twenty-fourth Infantry, taken by Capt. Edward Everts at Fort Apache, Ariz., in accordance with orders from headquarters of the department. The object of the order was to improve the physical condition of the soldiers by two months of systematic and well-directed exercise, and to demonstrate the results by accurate measurements taken before and after the gymnastic course. Unfortunately the full intent of the order was not carried out; the cause of this failure is not stated. The close inspection given to these men in taking their measurements shows that their physical condition was much below the proper standard. Stooping shoulders, sunken chests, soft and weak muscles, and heavy dull appearance were noted with startling frequency. The forced respiratory movement, as taken, represents imperfectly the possible respiratory action of the lungs in most cases.

	Average.	Maximum.	Minimum.
1. Age ....years..	30.1	57	21
2. Length of service ....do ..	7.8	24	$\frac{1}{12}$
3. Weight* ....pounds..	147.92	224.5	108
4. Height* ....inch..	67.55	76.58	61.30
5. Circumference of neck † ....do....	14.49	16.69	12.44
6. Chest at inspiration ‡ ....do....	37.16	42.99	32.84
7. Chest at expiration ....do....	35.64	41.73	31.50
8. Chest movement ....do...	1.53	3.54	.12
9. Waist § ....do....	29.81	39.37	21.65
10. Circumference of biceps, fixed ....do ..	12.72	16.06	10.39
11. Circumference of biceps, extended ....do....	11.38	14.21	9.13
12. Circumference of forearm, extended ....do....	11.06	13.54	9.74
13. Circumference of hips ....do....	35.03	38.66	31.93
14. Circumference of middle thigh ....do....	20.49	24.96	17.09
15. Circumference of calf ....do....	14.17	17.36	12.01

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[*] Average of infantrymen: Weight 151.6 pounds, height 67.82 inches. Of cavalrymen 144.2 and 67.26. There were 9 men over 6 feet in height and 1 under 5 feet 3 inches.

[†] Below thyroid cartilage.

[‡] Horizontally over or below nipples.

[§] This and the measurements following it were taken at the largest circumference.

APPENDED PAPERS.

In closing I have the honor to invite attention to a series of tables which give in detail the statistical data on which the statements of this report are based. They consist of—

I. A numerical view of the effects of disease and injury on the Army during the calendar year 1890, as compared with the corresponding data of the year 1889 and of the decade ending December 31, 1888.

II. The relative sickness of the troops, white and colored, in the various military departments.

III. The military posts in each department, alphabetically arranged, with mean strength, admissions for disease and injury; also deaths and discharges, with ratios per thousand of strength for admissions and noneffectiveness, the averages of daily sickness, and the meteorological data for the year 1890.

IV. A general view of the results of disease and injury at each of the various military stations, arranged in the order of their mean strength.

V. Twenty posts having the highest rates of admission for the year; the said rates compared with those of 1885–'89, inclusive.

VI. Twenty posts having the highest rates of noneffectiveness during the year; the said rates compared with those of 1885–'89, inclusive.

VII. Twenty posts having the highest admission rates for *disease*, excluding venereal diseases, vaccina, and alcoholism, together with their ratios for deaths, discharges, and constant noneffectiveness; also the corresponding average rates of the Army.

VIII. Twenty posts having the highest noneffective rates for *disease*, excluding venereal diseases, vaccina, and alcoholism, together with the average number sick daily, and average duration of each case; also the corresponding average rates of the Army.

IX. The military posts in each department, showing the rates of admission, death, discharge, and noneffectiveness for *disease*, not including venereal diseases, vaccina, nor alcoholism.

X. The monthly prevalence of disease among the white and colored troops of the Army.

XI. The rates, per thousand of strength, of admission, death, discharge, and noneffectiveness of the Army and of the troops in the several departments for the year, as compared with those of the decade 1879–'88, and of certain foreign armies.

XII. Admission rates for specific febrile diseases in various armies.

XIII. Distribution of specific febrile diseases at United States military posts during the year.

XIV. The distribution of pneumonia at United States military posts during the year.

XV. Twenty posts giving the largest admission rates for malarial diseases, rheumatism, diarrhœal and veneral diseases, respectively.

XVI. Twenty posts giving the highest noneffective rates for malarial diseases, rheumatism, diarrhœal and venereal diseases, respectively.

XVII. The prevalence of alcoholism at the various posts and its influence on the effective force of the garrison.

XVIII. Showing the relation of certain classes of disease to arm of service and age of individual.

XIX. Showing the relation of certain classes of disease to nativity and length of service.

XX. Showing the relation of certain specified diseases to arm of service and age of individual.

XXI. Showing the relation of certain specified diseases to nativity and length of service.

XXII. The causes and ratios of rejection among 19,926 recruits examined during the year; white, 18,437, colored, 1,489.

Respectfully submitted.

CHARLES SUTHERLAND,
Surgeon-General.

Hon. REDFIELD PROCTOR,
Secretary of War,

APPENDED PAPERS.

STATISTICAL TABLES.

TABLE I.—*A numerical view of the effects of disease and injury on the Army during the calendar year* 1890, *as compared with the corresponding data from the reports of* 1889 *and of the decade* 1879–'88.

United States Army.	White.	Colored.	Total.
Average strengths as shown by returns of the Adjutant-General	*24,167	*2,517	*26,684
as shown by reports of the Medical Department	†21,910	†2,324	†24,234
All admissions to sick report during the year	29,519	4,027	33,546
treated in hospital	14,090	1,856	15,946
treated in quarters	14,298	2,067	16,365
treated in field	1,131	104	1,235
Ratios of all admissions per 1,000 of mean strength	1,347.28	1,732.79	1,384.25
for the previous year	1,318.67	1,280.98	1,315.02
for the preceding decade	1,528.91	1,688.32	1,544.23
Admissions for disease	24,333	3,307	27,640
ratios per 1,000 of mean strength	1,110.58	1,422.98	1,140.54
for the previous year	1,073.70	997.10	1,066.30
for the preceding decade	1,286.59	1,411.10	1,298.56
Admissions for injury	5,186	720	5,906
ratios per 1,000 of mean strength	236.69	309.81	243.71
for the previous year	244.96	283.82	248.72
for the preceding decade	242.32	277.22	245.67
Ratios per 1,000 of mean strength of cases treated in hospital	643.08	798.63	658
of cases treated in quarters	652.58	889.41	675.29
of cases treated in field	51.62	44.75	50.96
Number constantly noneffective during the year	924.38	110.76	1,035.14
ratios per 1,000 of mean strength	42.19	47.66	42.71
ratios for the previous year	44.44	41.09	44.12
ratios for the preceding decade	43.51	43.38	43.49
Number of days lost on account of sickness during the year	337,397	40,430	377,827
average for each man of the Army	15.4	17.4	15.6
for the previous year	16.2	15	16.1
for the preceding decade	15.9	15.8	15.9
Average number of days each case was treated	11.4	10	11.3
for the previous year	12.3	11.7	12.2
for the preceding decade	10.4	9.4	10.3
Average days treatment for patients returned to duty	10.0	8.4	9.8
discharged for disability	73.5	80.4	74.3
who died	23.4	32.7	24.6
Number of discharges for disability	542	72	614
ratios per 1,000 of mean strength	22.43	28.61	23.01
for the previous year	22.65	24.14	22.79
for the preceding decade	32.13	30.67	31.99
Number of discharges for disease	495	57	552
ratios per 1,000 of mean strength	20.48	22.65	20.69
for the previous year	19.33	22.22	19.61
for the preceding decade	28.40	26.29	28.20
Number of discharges for injury	47	15	62
ratios per 1,000 of mean strength	1.95	5.96	2.32
for the previous year	3.32	1.92	3.18
for the preceding decade	3.73	4.38	3.79
Number of deaths from all causes	203	29	232
ratios per 1,000 of mean strength	8.40	11.52	8.69
for the previous year	5.99	9.58	6.33
for the preceding decade	8.97	11.69	9.23
Number of deaths from disease	118	22	140
ratios per 1,000 of mean strength	4.88	8.74	5.25
for the previous year	3.64	6.90	3.95
for the preceding decade	5.85	7.16	5.98
Number of deaths from injury	85	7	92
ratios per 1,000 of mean strength	3.52	2.78	3.45
for the previous year	2.35	2.68	2.38
for the preceding decade	3.12	4.53	3.26

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* Used in computing the ratios of deaths and discharges for the whole Army.
† Used in computing all ratios for the Army except those of deaths and discharges.

TABLE II.—*The relative sickness among the troops, white and colored, in the various military departments during the year 1890.*

Army by departments.		Mean strength of command.	Admissions during the year 1890.						Admission rate per 1,000 of mean strength.	Troops per 1,000 of mean strength constantly noneffective from sickness.
			Quarters.	Hospital.	Field.	Disease.	Injury.	Total.		
East	W..	5,468	3,618	4,545	84	7,059	1,188	8,247	1,509.61	43.95
	C ..	64	15	124	......	130	9	139	2,171.87	112.11
	T ..	5,527	3,633	4,669	84	7,189	1,197	8,386	1,517.28	44.77
Platte	W..	2,445	1,419	1,271	98	2,251	537	2,788	1,140.29	33.02
	C ..	607	469	552	8	820	209	1,029	1,695.22	37.73
	T ..	3,052	1,888	1,823	106	3,071	746	3,817	1,250.66	33.96
Dakota	W..	3,670	1,733	1,677	679	3,229	860	4,089	1,114.17	32.54
	C ..	462	180	325	92	490	107	597	1,292.21	33.29
	T ..	4,132	1,913	2,002	771	3,719	967	4,686	1,134.08	32.63
Missouri	W..	3,682	2,642	2,338	63	4,116	927	5,043	1,369.64	42.58
	C ..	94	40	132	1	129	44	173	1,840.43	72.84
	T ..	3,776	2,682	2,470	64	4,245	971	5,216	1,381.36	43.33
Texas	W..	2,095	1,793	1,558	55	2,922	484	3,406	1,625.78	50.75
California	W..	1,157	707	558	125	1,102	288	1,390	1,201.38	36.54
Columbia	W..	1,464	1,121	802	26	1,571	378	1,949	1,331.28	40.18
Arizona	W..	1,892	1,265	1,323	1	2,065	524	2,589	1,368.39	45.93
	C ..	1,092	1,363	723	3	1,738	351	2,089	1,913.00	48.57
	T ..	2,984	2,628	2,046	4	3,803	875	4,678	1,567.69	46.90
Hot Springs, Ark.	W..	42	......	18	......	18	......	18	......	......
	C ..	5	......	......	......	......	......	......	......	......
	T ..	47	......	18	......	18	......	18	......	......
At large:										
Miscellaneous deaths and discharges.	W..	......	......	......	......	......	......	......	......	......
	C ..	......	......	......	......	......	......	......	......	......
	T ..	......	......	......	......	......	......	......	......	......
Total for the Army	W..	21,910	14,298	14,090	1,131	24,333	5,186	29,519	1,347.28	42.19
	C...	2,324	2,067	1,856	104	3,307	720	4,027	1,732.79	47.66
	T...	24,234	16,365	15,946	1,235	27,640	5,906	33,546	1,384.25	42.71

Army by departments.		Deaths.	Annual death rate per 1,000 of mean strength.	Discharges for disability.	Annual discharge rate per 1,000 of mean strength.	Average duration of treatment among patients.			Death rate per 1,000 of admissions.	Discharge rate per 1,000 of admissions.	Recoveries per 1,000 of admissions.	Average sick daily.	Average duration of treatment among all admissions.
						Who died.	Discharged for disability.	Recovered.					
East	W..	33	6.22	121	22.15	25.0	58.3	9.3	4.12	14.67	968.11	240.33	10.6
	C...	......	......	9	140.62	......	44.7	14.7	......	64.75	848.92	7.17	18.8
	T ..	33	6.15	130	23.52	25.0	57.3	9.4	4.05	15.50	966.13	247.50	10.8
Platte	W..	18	7.36	32	13.09	32.9	78.8	9.5	6.46	11.48	978.48	80.74	10.6
	C...	7	11.53	12	19.77	31.7	82.1	6.7	6.80	11.66	988.34	22.90	8.1
	T ..	25	8.19	44	14.42	32.6	79.7	8.6	6.55	11.53	981.14	103.64	9.9
Dakota	W..	51	13.90	60	16.35	7.5	74.2	9.3	12.47	14.67	950.84	119.44	10.7
	C...	4	8.66	9	19.48	18.2	85.2	7.4	6.70	15.08	934.67	15.38	9.4
	T ..	55	13.31	69	16.70	8.3	75.7	9.1	11.74	14.72	948.78	134.81	10.5
Missouri	W..	42	11.41	93	25.26	21.4	65.1	10.1	8.33	18.44	965.50	156.78	11.3
	C...	2	21.28	7	74.47	17.5	34.3	15.4	11.56	40.46	947.98	6.85	14.4
	T ..	44	11.65	100	26.48	21.3	62.9	10.2	8.44	19.17	964.92	163.63	11.5
Texas	W..	14	6.68	55	26.25	23.0	58.1	10.6	4.11	16.15	962.71	106.32	11.4
California	W..	3	2.59	35	30.25	166.3	71.8	9.3	2.16	25.18	958.27	42.28	11.1
Columbia	W..	11	7.51	30	20.49	25.5	77.0	9.2	5.64	15.39	972.29	58.82	11.0
Arizona	W..	13	6.87	59	31.18	45.5	72.5	10.1	5.02	22.79	972.58	86.90	12.3
	C.	15	13.74	29	26.56	33.0	77.2	7.0	7.18	13.88	957.87	53.04	9.3
	T ..	28	9.38	88	29.49	38.8	74.0	8.7	5.99	18.81	966.01	139.94	10.9
Hot Springs, Ark.	W..	2	......	27	......	167.5	277.1	169.5	......	......	......	32.76	......
	C...	1	......	4	......	124.0	289.0	234.6	......	......	......	5.42	......
	T ..	3	......	31	......	153.0	278.6	180.6	......	......	......	38.19	......
At large:													
Miscellaneous deaths and discharges.	W..	15	......	30	......	......	......	......	......	......	......	......	......
	C...	......	......	2	......	......	......	......	......	......	......	......	......
	T ..	15	......	32	......	......	......	......	......	......	......	......	......
Total for the Army	W..	202	8.40	542	22.43	23.4	73.5	10.0	6.84	18.36	967.55	924.38	11.4
	C...	29	11.52	72	28.61	32.7	80.4	8.4	7.20	17.88	961.51	110.77	10.0
	T ..	231	8.69	614	23.01	24.5	74.3	9.8	6.89	18.30	966.82	1,035.14	11.3

TABLE III.—*Military posts in each department, alphabetically arranged, with mean strength, admissions for disease and injury, also deaths and discharges, with ratios per thousand of strength for admissions and noneffectiveness, the averages of daily sickness, and meteorological data for 1890.*

DEPARTMENT OF THE EAST.

Names of stations.	Mean strength.	Cases.			Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Temperature.			Total precipitation.
		Disease.	Injury.	Total.							Mean.	Maximum.	Minimum.	
										Feet.				In.
Adams, Fort, R. I	197	115	39	154	781.73	5.00	25.38	5	1	30	48.8	93	4	38.07
Allegheny Arsenal, Pa.	29	16	4	20	689.66	.85	29.48	....	1	704	....	98	−2	53.02
Augusta Arsenal, Ga	26	23	1	24	923.08	1.70	65.54	2	....	600	66.4	102	23	42.98
Barrancas, Fort, Fla	86	128	16	144	1,674.42	5.03	58.49	1	2	30	69.9	96	25	61.15
Brady, Fort, Mich	95	107	14	121	1,273.68	2.99	31.49	....	....	600	....	88	−34	33.37
Columbus Barracks, Ohio	502	870	72	942	1,876.49	38.93	77.55	32	3	740	53.3	97	4	51.25
Columbus, Fort, N. Y	164	150	26	176	1,073.17	6.44	39.27	8	2	25	52.8	91	8	51.33
Davids Island, N. Y	434	625	88	713	1,642.86	22.76	52.45	5	2	30	50.3	93	4	46.69
Frankford Arsenal, Pa	38	50	3	53	1,394.74	1.83	48.16	1	2	50	54.2	99	7	33.88
Hamilton, Fort, N. Y	198	269	53	322	1,626.26	8.30	41.91	13	....	47	52.3	91	7	44.84
Indianapolis Arsenal, Ind	25	42	4	46	1,840.00	1.42	56.99	1	....	698	54.0	97	4	54.87
Jackson Barracks, La	92	166	33	199	2,163.04	6.50	70.64	2	2	10	...	97	25	52.60
Kennebec Arsenal, Me	15	27	2	29	1,933.33	.39	26.48	....	1	200	41.3	88	−20	32.66
McHenry, Fort, Md	99	117	20	137	1,383.84	6.31	63.73	5	....	36	56.6	98	12	46.96
McPherson, Fort, Ga	188	408	60	468	2,489.36	11.50	61.16	1	2	1,078	...	101	10	45.82
Mackinac, Fort, Mich	94	125	26	151	1,606.38	2.51	26.73	2	....	728	40.3	81	−14	28.50
Madison Barracks, N. Y	248	295	51	346	1,395.16	7.56	30.50	1	1	262	...	100	−19	32.14
Monroe, Fort, Va	433	633	107	740	1,709.01	19.93	46.04	3	1	8	60.7	96	22	46.97
Mount Vernon Barracks, Ala	111	157	12	169	1,522.52	7.61	68.57	1	2	155	66.0	101	20	48.97
Myer, Fort, Va	137	154	31	185	1,350.36	5.10	37.20	2	2	200	55.3	99	12	39.31
Newport Barracks, Ky	62	89	18	107	1,725.81	3.22	51.92	1	...	588	55.6	96	7	47.68
Niagara, Fort, N. Y	114	103	26	129	1,131.58	3.28	28.74	2	2	271	49.4	97	7	34.62
Ontario, Fort, N. Y	43	67	6	73	1,697.67	2.15	49.89	4	....	282	45.6	93	0	40.86
Plattsburg Barracks, N. Y	47	58	8	66	1,404.26	1.64	34.92	1	..	186	....	....	−15	37.39
Porter, Fort, N. Y	95	82	14	96	1,010.53	3.13	33.28	1	1	660	47.1	89	7	46.55
Preble, Fort, Me	54	57	15	72	1,333.33	1.72	31.91	....	....	38	...	....	...	48.25
Sandy Hook, N. J	32	47	11	58	1,812.50	.55	17.04	...	....	.....	52.8	91	8	51.32
Schuyler, Fort, N. Y	78	51	17	68	871.79	2.62	33.58	2	....	25	53.8	95	6	52.30
Springfield Armory, Mass	28	13	2	15	535.71	.56	20.06	....	1	250	48.7	95	0	54.68
St. Francis Barracks, Fla.	65	116	15	131	2,015.38	4.34	66.76	4	....	15	...	95	28	52.27
Thomas, Fort, Ky	31	33	7	40	1,290.32	.51	16.35	....	....	....	55.6	96	7	47.88
Trumbull, Fort, Conn	52	44	14	58	1,115.38	1.78	34.19	1	...	25	51.8	95	5	47.70
Wadsworth, Fort, N. Y	111	100	19	119	1,072.07	3.30	29.69	1	1	140	53.1	97	7	53.92
Warren, Fort, Mass	86	69	21	90	1,046.51	2.98	34.63	1	1	38	45.8	90	2	41.79
Washington Barracks, D. C	255	287	52	339	1,329.41	13.22	51.86	17	1	106	55.9	99	15	35.07
Watertown Arsenal, Mass	33	31	4	35	1,060.61	.79	23.91	....	....	100	49.1	95	0	50.21
Watervliet Arsenal, N. Y.	60	64	18	82	1,366.67	1.47	24.57	2	....	50	..	97	−8	44.90
Wayne, Fort, Mich	211	250	33	283	1,341.23	7.98	37.84	3	...	580	46.9	97	3	38.44
West Point, N. Y	378	458	96	554	1,465.61	11.63	30.77	1	1	167	47.3	98	−1	50.26
Willets Point, N. Y	400	604	121	725	1,812.50	17.24	43.10	4	1	80	52.2	92	−2	.....
Wood, Fort, N. J	46	21	2	23	500.00	.13	2.92	....	....	.....	52.8	91	8	51.32
Field	35	68	16	84	2,400.00	.55	15.58	....	....	.....	...	....	...	.....
Total	5,527	7,189	1,197	8,386	1,517.28	247.50	44.78	130	34	.....	....	....	....	.....

DEPARTMENT OF DAKOTA.

Names of stations.	Mean strength.	Disease.	Injury.	Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Mean.	Maximum.	Minimum.	Total precipitation.
Abraham Lincoln, Fort, N. Dak.	95	95	26	121	1,273.68	3.04	31.95	2	....	1,914	41.4	105	−34	18.11
Assinniboine, Fort, Mont	437	475	90	565	1,292.91	15.56	35.61	10	1	2,720	41.0	99	−40	9.76
Bennett, Fort, S. Dak	58	45	6	51	879.31	1.55	26.64	....	2	1,510	46.6	107	−28	13.59
Buford, Fort, N. Dak	259	219	60	279	1,077.22	8.51	32.86	8	1	1,930	39.8	100	−43	14.24
Custer, Fort, Mont	331	385	72	457	1,380.66	19.17	57.91	6	...	3,040	45.2	100	−34	9.66
Keogh, Fort, Mont	347	167	67	234	674.35	8.90	25.66	1	1	2,516	42.8	105	−47	11.52
Maginnis, Fort, Mont	76	110	22	132	1,736.84	3.45	45.35	2	1	4,340	(*)	(*)	(*)	(*)
Meade, Fort, S. Dak	308	213	50	263	853.90	10.89	35.34	7	2	3,624	46.4	101	−29	16.23
Missoula, Fort, N. Dak	168	177	39	216	1,285.71	4.86	28.93	3	1	3,375	43.1	104	−18	13.39
Pembina, Fort, N. Dak	75	50	10	60	800.00	1.15	15.38	....	....	900	38.3	97	−46	...
Pierre, Fort, S. Dak	34	30	3	33	970.59	.83	24.01	....	1	.....	(*)	(*)	(*)	(*)
Poplar River, Camp Mont.	97	151	22	173	1,783.51	3.25	33.47	....	2	2,030	39.7	99	−46	11.20

* No reports.

TABLE III.—*Military posts in each department, alphabetically arranged, with mean strength, admissions for disease and injury, etc.*—Continued.

DEPARTMENT OF DAKOTA—Continued.

Names of stations.	Mean strength.	Cases.			Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Temperature.			Total precipitation.
		Disease.	Injury.	Total.							Mean.	Maximum.	Minimum.	
										Feet.				*In.*
Randall, Fort, S. Dak	102	103	20	123	1,205.88	3.55	34.76	....	....	1,245	48.5	104	—24	14.04
Shaw, Fort, Mont	159	154	28	182	1,144.65	5.58	35.06	4	2	3,550	45.0	101	—39	12.81
Sheridan, Camp, Wyo	65	60	22	82	1,261.54	2.56	39.41	2	....	......	....	91	—30	28.48
Snelling, Fort, Minn	290	235	90	325	1,120.69	10.56	36.42	8	4	840	42.7	98	—22	28.86
Sully, Fort, S. Dak	112	83	22	105	937.50	3.89	34.74	3	1	1,678	45.8	103	—30	13.28
Totten, Fort, N. Dak	65	61	6	67	1,030.77	2.08	32.03	....	....	1,487	(*)	(*)	(*)	(*)
Yates, Fort, N. Dak	287	376	71	447	1,557.49	14.68	51.14	12	1	1,670	43.9	101	—28	15.71
Field	767	530	241	771	1,005.22	10.79	14.06	1	35	.....	....	....	....	.....
Total	4,132	3,719	967	4,686	1,134.08	134.81	32.63	69	55	.....	....	....	....	.....

* No reports.

DEPARTMENT OF THE PLATTE.

Names of stations.	Mean strength.	Disease.	Injury.	Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Mean.	Maximum.	Minimum.	Total precipitation.
Bridger, Fort, Wyo	142	113	37	150	1,056.34	4.36	30.68	....	1	6,670	....	92	—30	.....
D. A. Russell, Wyo	348	289	77	366	1,051.72	9.61	27.61	4	2	6,021	45.1	104	—31	17.99
Douglas, Fort, Utah	423	369	93	462	1,092.20	15.80	37.36	4	3	4,904	51.9	100	— 6	11.24
Du Chesne, Fort, Utah	260	316	73	389	1,496.15	8.27	31.81	5	....	......	46.9	100	—23	5.50
Government Sawmill, Utah.	14	11	8	19	1,357.14	.19	13.89	....	....	......	(*)	(*)	(*)	(*)
Laramie, Fort, Wyo	14	30	2	32	2,285.71	.30	21.72	....	....	4,241	(*)	(*)	(*)	(*)
McKinney, Fort, Wyo	146	96	28	124	849.32	4.49	30.76	1	1	5,175	46.4	97	—22	8.98
Niobrara, Fort, Nebr	378	452	103	555	1,468.25	12.39	32.78	4	2	2,750	43.8	108	—34	14.79
Omaha, Fort, Nebr	415	231	48	279	672.29	13.21	31.83	15	3	960	51.1	101	—12	22.45
Pilot Butte, Camp, Wyo	78	88	23	111	1,423.08	2.11	27.01	....	1	.....	41.4	94	—28	7.20
Robinson, Fort, Nebr	393	632	113	745	1,895.67	17.49	44.51	3	10	3,675	...	102	—23	11.76
Sidney, Fort, Nebr	204	199	54	253	1,240.20	9.00	44.12	5	1	4,326	...	103	—13	...
Washakie, Fort, Wyo	111	175	51	226	2,036.04	5.55	49.98	3	....	5,462	43.1	93	—24	7.74
Field	126	70	36	106	841.27	.87	6.87	....	1	.....	....	....	....	.....
Total	3,052	3,071	746	3,817	1,250.66	103.64	33.96	44	25	.....	....	....	....	.....

DEPARTMENT OF THE MISSOURI.

Names of stations.	Mean strength.	Disease.	Injury.	Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Mean.	Maximum.	Minimum.	Total precipitation.
Crawford, Fort, Colo	67	58	15	73	1,089.55	1.84	27.52	2	....	6,200	....	92	—11	.....
Chicago, Headquarters Division of the Missouri	58	16	.....	16	275.86	.82	14.22	1	2	661	48.8	96	— 5	32.69
Elliott, Fort, Tex	122	201	41	242	1,983.61	9.36	76.71	3	3	2,650	(*)	(*)	(*)	(*)
Gibson, Fort, Ind. T.	47	21	1	22	468.09	1.15	24.37	...	1	600	(*)	(*)	(*)	(*)
Guthrie, Camp, Okla	43	42	13	55	1,279.07	1.37	31.86	1	....	.....	62.2	108	6	30.02
Jefferson Barracks, Mo	406	346	60	406	1,000.00	15.69	38.65	17	2	475	57.1	101	1	35.32
Leavenworth, Fort, Kans	586	587	150	737	1,257.68	31.59	53.91	24	9	844	52.2	98	— 8	27.80
Leavenworth, Prison Guard, Kans	115	100	8	108	939.13	2.13	18.53	2	....	844	52.2	98	— 8	27.80
Lewis, Fort, Colo	198	199	62	261	1,318.18	8.64	43.66	3	4	8,500	44.3	89	—17	24.27
Little Rock Barracks, Ark	59	90	12	102	1,728.81	3.35	56.70	2	2	290	62.8	97	16	63.72
Logan, Fort, Colo	278	283	55	338	1,215.83	16.26	58.49	....	6	.....	51.1	97	—11	7.84
Oklahoma, Camp, Okla	78	65	23	88	1,128.21	3.09	39.62	..	1	.....	(*)	(*)	(*)	(*)
Reno, Fort, Okla	296	460	109	569	1,922.30	16.73	56.53	6	4	3,200	60.4	105	0	26.79
Riley, Fort, Kans	642	617	207	824	1,283.49	23.40	36.45	11	4	1,300	54.0	103	—12	22.09
Rock Island Arsenal, Ill.	60	80	9	89	1,483.33	1.82	30.37	3	1	528	49.7	102	—11	33.49
Sheridan, Fort, Ill	101	86	12	98	970.30	2.25	22.30	2	1	....	48.5	98	— 7	38.94
Sill, Fort, Okla	330	717	125	842	2,551.52	15.65	47.41	12	4	1,200	61.0	103	6	30.90
St. Louis, Headquarters Dept. of the Missouri.	32	3	....	3	93.75	.06	1.88	....	....	...	56.8	98	4	37.09
Supply, Fort, Ind. T.	209	223	56	279	1,334.93	7.59	36.32	8	....	2,300	....	105	— 1	.....
Field	49	51	13	64	1,306.12	.82	16.77	3	..	.....	....	....	....	....
Total	3,776	4,245	971	5,210	1,381.36	163.61	43.33	100	41	....	....	....	....	.....

*No reports.

TABLE III.—*Military posts in each department, alphabetically arranged, with mean strength, admissions for disease and injuries, etc.*—Continued.

DEPARTMENT OF TEXAS.

Names of stations.	Mean strength.	Cases.			Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Temperature.			Total precipitation.
		Disease.	Injury.	Total.							Mean.	Maximum.	Minimum.	
										Feet.				*In.*
Bliss, Fort, Tex	123	106	14	120	975.61	2.76	22.47	6	....	3,600	65.0	103	15	.....
Brown, Fort, Tex	135	202	52	254	1,881.48	8.81	65.23	3	1	50	....	96	29	.....
Clark, Fort, Tex	481	701	102	803	1,669.44	31.38	65.25	17	3	1,000	...	100	24	21.66
Davis, Fort, Tex	201	210	37	247	1,228.86	10.11	50.80	2	1	4,928	(*)	(*)	(*)	(*)
Del Rio, Camp, Tex	13	21	....	21	1,615.38	.34	26.34	....	....	820	(*)	(*)	(*)	(*)
Eagle Pass, Camp at, Tex	56	91	24	115	2,053.57	3.34	59.59	1	....	800	71.8	107	17	21.09
Hancock, Fort, Tex	49	45	13	58	1,183.67	2.20	44.95	1	....	3,000	62.1	107	7	4.89
Langtry, Camp, Tex	13	10	3	13	1,000.00	.43	33.09	....	...	.....	(*)	(*)	(*)	(*)
McIntosh, Fort, Tex	130	83	13	96	738.46	3.29	25.31	1	3	360	72.2	102	23	15.74
Pena Colorado, Camp, Tex	54	36	7	43	796.30	1.07	19.74	....	....	3,800	62.5	103	11	.....
Ringgold, Fort, Tex	119	86	17	103	865.55	3.17	26.61	1	1	521	74.2	107	20	13.43
Sam Houston, Fort, Tex	606	1,285	188	1,473	2,430.69	38.33	63.25	23	5	781	69.5	99	21	29.77
San Antonio, Hdqrs. Department of Texas	32	5	.....	5	156.25	.18	3.94	....	....	781	69.5	99	21	29.77
Field	83	41	14	55	662.65	.87	10.53	....	....	...	....	....	....	.....
Total	2,095	2,922	484	3,406	1,625.78	106.33	50.75	55	14	.....	....	....	....	.....

* No reports.

DEPARTMENT OF CALIFORNIA.

Names of stations.	Mean strength.	Disease.	Injury.	Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Mean.	Maximum.	Minimum.	Total precipitation.
Alcatraz Island, Cal	92	86	13	99	1,076.09	4.09	44.43	2	....	136	53.4	85	26	23.33
Angel Island, Cal	188	139	34	173	920.21	5.16	27.44	9	1	.....	55.4	91	29	19.55
Benicia Arsenal, Cal	52	32	8	40	769.23	1.40	26.87	3	1	64	57.7	100	27	22.78
Benicia Barracks, Cal	76	84	13	97	1,276.32	3.19	42.03	2	....	64	57.7	100	27	22.78
Bidwell, Fort, Cal	71	83	18	101	1,422.54	1.65	23.31	1	....	4,680	(*)	(*)	(*)	(*)
Gaston, Fort, Cal	40	39	7	46	1,150.00	1.10	27.40	1	....	397	55.1	105	24	57.98
Mason, Fort, Cal	64	56	10	66	1,031.25	2.72	42.51	4	....	113	54.4	81	35	23.42
Presidio of San Francisco, Cal	455	488	155	643	1,413.19	20.91	45.96	11	1	60	...	84	28	.....
Field	119	95	30	125	1,050.42	2.06	17.31	2	...	.....	....	....	....	.....
Total	1,167	1,102	288	1,390	1,201.38	42.28	36.54	35	3	.....	....	....	....	.....

* No reports.

DEPARTMENT OF COLUMBIA.

Names of stations.	Mean strength.	Disease.	Injury.	Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Mean.	Maximum.	Minimum.	Total precipitation.
Boisé Barracks, Idaho	105	95	26	121	1,152.38	3.47	33.01	2	....	2,880	49.1	106	-12	11.22
Canby, Fort, Wash	63	55	16	71	1,126.98	1.59	25.22	1	....	179	49.8	85	17	53.95
Klamath, Fort, Oregon	5	5	....	5	1,000.00	.10	20.27	....	....	4,200	(*)	(*)	(*)	(*)
Sherman, Fort, Idaho	272	407	93	500	1,838.24	12.01	44.15	5	3	2,198	47.0	98	−27	....
Spokane, Fort, Wash	200	193	59	252	1,260.00	8.91	44.55	6	1	1,600	47.0	105	−22	13.86
Townsend, Fort, Wash	58	37	11	48	827.59	.97	16.77	....	....	135	49.1	84	9	19.95
Vancouver Barracks, Wash	420	425	84	509	1,211.90	16.39	39.02	9	6	50	50.7	99	3	(*) 37.97
Walla Walla, Fort, Wash	318	334	83	417	1,311.32	15.17	47.71	7	1	1,018	51.5	106	−13	11.01
Field	23	20	6	26	1,130.43	.22	9.41	....	....	.....	....	..	....	.....
Total	1,464	1,571	378	1,949	1,331.28	58.82	40.18	30	11	.....	....	....	....	.....

* No reports.

TABLE III.—*Military posts in each department, alphabetically arranged, with mean strength, admissions for disease and injury, etc.*—Continued.

DEPARTMENT OF ARIZONA.

Names of stations.	Mean strength.	Cases. Disease.	Cases. Injury.	Cases. Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Temperature. Mean.	Temperature. Maximum.	Temperature. Minimum.	Total precipitation.
										Feet.				*In.*
Apache, Fort, Ariz	242	469	105	574	2,371.90	13.43	55.51	11	4	5,050	55.8	97	8	26.72
Bayard, Fort, N. Mex	292	364	69	433	1,482.88	15.15	51.89	7	4	6,040	....	94	9	15.86
Bowie, Fort, Ariz	119	185	54	239	2,008.40	4.76	39.99	1	....	4,826	60.9	95	18	17.65
Grant, Fort, Ariz	327	589	133	722	2,207.95	16.45	50.30	5	7	4,856	61.5	96	19	16.74
Huachuca, Fort, Ariz	275	153	40	193	701.82	6.05	22.02	7	1	5,173	....	98	11	.....
Lowell, Fort, Ariz	170	165	42	207	1,217.65	5.82	34.25	7	1	2,530	67.3	109	20	20.23
McDowell, Fort, Ariz	52	42	11	53	1,019.23	1.63	31.35	1	...	1,800	(*)	(*)	(*)	(*)
Marcy, Fort, N. Mex	110	103	30	133	1,209.09	3.45	31.36	1	1	6,846	49.5	92	−4	12.11
Mojave, Fort, Ariz	28	44	5	49	1,750.00	2.11	75.24	....	....	600	(*)	(*)	(*)	(*)
San Carlos, Ariz	250	340	52	392	1,568.00	8.80	35.21	7	1	2,156	64.3	109	20	18.62
San Diego Barracks, Cal	61	71	9	80	1,311.48	7.47	122.46	5	2	150	62.6	90	34	7.83
Selden, Fort, N. Mex	17	16	1	17	1,000.00	.36	21.43	1	1	4,250	(*)	(*)	(*)	(*)
Stanton, Fort, N. Mex	133	168	53	221	1,661.65	9.02	67.83	4	2	7,500	52.7	90	6	11.87
Thomas, Fort, Ariz	106	135	22	157	1,481.13	3.76	35.49	....	1	2,710	64.9	108	18	13.93
Union, Fort, N. Mex	142	75	35	110	774.65	3.77	26.53	2	....	6,700	46.6	95	−4	14.73
Verde, Fort, Ariz	52	37	9	46	884.62	1.12	21.44	3	....	3,160	(*)	(*)	(*)	(*)
Whipple Barracks, Ariz	241	329	77	406	1,684.65	14.89	61.80	14	1	5,340	(*)	(*)	(*)	(*)
Wingate, Fort, N. Mex	359	516	126	642	1,788.30	21.84	60.84	12	2	6,649	51.6	98	−8	.....
Field	8	2	2	4	500.00	.05	6.51	....	...	....	....	....	....	.....
Total	2,984	3,803	875	4,678	1,567.69	139.94	46.89	88	28	.....	.....	....	....	.....

* No reports.

TABLE IV.—*Giving a general view of the results of disease and injury at each of the various military stations, arranged in the numerical order of their mean strength.*

GROUP 1.—Fourteen stations, garrisoned by 400 to 700 men each. Average, 474.

Military stations.	Mean strength.	Admissions. No.	Admissions. Ratio per 1,000.	Constantly non-effective. No.	Constantly non-effective. Ratio per 1,000.	Deaths. No.	Deaths. Ratio per 1,000.	Discharges. No.	Discharges. Ratio per 1,000.
Fort Riley, Kans	642	824	1,283.49	23.40	36.45	4	6.23	11	17.13
Fort Sam Houston, Tex	606	1,473	2,430.69	38.32	63.25	5	8.25	23	37.95
Fort Leavenworth, Kans	586	737	1,257.68	31.59	53.91	9	15.36	24	40.96
Columbus Barracks, Ohio	502	942	1,876.49	38.93	77.55	3	5.98	32	63.75
Fort Clark, Tex	481	803	1,669.44	31.38	65.25	3	6.24	17	35.34
Presidio, San Francisco, Cal	455	643	1,413.19	20.91	45.96	1	2.20	11	24.18
Fort Assinniboine, Mont	437	565	1,292.91	15.56	35.61	1	2.29	10	22.88
Davids Island, N. Y	434	713	1,642.86	22.76	52.45	2	4.61	5	11.52
Fort Monroe, Va	433	740	1,709.01	19.93	46.04	1	2.31	3	6.93
Fort Douglas, Utah	423	462	1,092.20	15.80	37.36	3	7.09	4	9.46
Vancouver Barracks, Wash	420	509	1,211.90	16.39	39.02	6	14.29	9	21.43
Fort Omaha, Nebr	415	279	672.29	13.21	31.83	3	7.23	15	36.14
Jefferson Barracks, Mo	406	406	1,000.00	15.69	38.65	2	4.93	17	41.87
Willets Point, N. Y	400	725	1,812.50	17.24	43.10	1	2.50	4	10.00
Summary	6,640	9,821	1,479.07	321.13	48.36	44	6.63	185	27.86

TABLE IV.—*Giving a general view of the results of disease and injury at each of the various military stations, etc.*—Continued.

GROUP 2.—Eleven stations garrisoned by 300 to 400 men each. Average, 347.

Military stations.	Mean strength.	Admissions.		Constantly non-effective.		Deaths.		Discharges.	
		No.	Ratio per 1,000.	No.	Ratio per 1,000.	No.	Ratio per 1,000.	No.	Ratio per 1,000.
Fort Robinson, Nebr	393	745	1,895.67	17.49	44.51	10	25.45	3	7.63
Fort Niobrara, Nebr	378	555	1,468.25	12.39	32.78	2	5.29	4	10.58
West Point, N. Y	378	554	1,465.61	11.63	30.77	1	2.65	1	2.65
Fort Wingate, N. Mex	359	642	1,788.30	21.84	60.82	2	5.57	12	33.43
Fort D. A. Russell, Wyo	348	366	1,051.72	9.61	27.61	2	5.75	4	11.49
Fort Keogh, Mont	347	234	674.35	8.90	25.66	1	2.88	1	2.88
Fort Custer, Mont	331	457	1,380.66	19.17	57.91	....	......	6	18.13
Fort Sill, Okla	330	842	2,551.52	15.65	47.41	4	12.12	12	36.36
Fort Grant, Ariz	327	722	2,207.95	16.45	50.30	7	21.41	5	15.29
Fort Walla Walla, Wash	318	417	1,311.32	15.17	47.71	1	3.14	7	22.01
Fort Meade, S. Dak	308	263	853.90	10.89	35.34	2	6.49	7	22.73
Summary	3,817	5,797	1,518.73	159.18	41.70	32	8.38	62	16.25

GROUP 3.—Nineteen stations garrisoned by 200 to 300 men each. Average, 251.

Fort Reno, Ind. T	296	569	1,922.30	16.73	56.53	4	13.51	6	20.27
Fort Bayard, N. Mex	292	433	1,482.88	15.13	51.89	4	13.70	7	23.97
Fort Snelling, Minn	290	325	1,120.69	10.56	36.42	4	13.79	8	27.59
Fort Yates, N. Dak	287	447	1,557.49	14.68	51.14	1	3.48	12	41.81
Fort Logan, Colo	278	338	1,215.83	16.26	58.49	6	21.58	....	......
Fort Huachuca, Ariz	275	193	701.82	6.05	22.02	1	3.64	7	25.45
Fort Sherman, Idaho	272	500	1,838.24	12.01	44.15	3	11.03	5	18.38
Fort Du Chesne, Utah	260	389	1,496.15	8.27	31.81	....	......	5	19.23
Fort Buford, N. Dak	259	279	1,077.22	8.51	32.86	1	3.86	8	30.89
Washington Barracks, D. C	255	339	1,329.41	13.22	51.86	1	3.92	17	66.67
San Carlos, Ariz	250	392	1,568.00	8.80	35.21	1	4.00	7	28.00
Madison Barracks, N. Y	248	346	1,395.16	7.56	30.50	1	4.03	1	4.03
Fort Apache, Ariz	242	574	2,371.90	13.43	55.51	4	16.53	11	45.45
Whipple Barracks, Ariz	241	406	1,684.65	14.89	61.80	1	4.15	14	58.09
Fort Wayne, Mich	211	283	1,341.23	7.98	37.84	....	......	3	14.22
Fort Supply, Ind. T	209	279	1,334.93	7.59	36.32	....	......	8	38.28
Fort Sidney, Nebr	204	253	1,240.20	9.00	44.12	1	4.90	5	24.51
Fort Davis, Tex	201	247	1,228.86	10.22	50.80	1	4.98	2	9.95
Fort Spokane, Wash	200	252	1,260.00	8.91	44.55	1	5.00	6	30.00
Summary	4,770	6,844	1,434.80	209.84	43.99	35	7.34	132	27.67

GROUP 4.—Thirty-one stations, garrisoned by 100 to 200 men each. Average, 138.

Fort Hamilton, N. Y	198	322	1,626.26	8.30	41.91	....	......	13	65.66
Fort Lewis, Colo	198	261	1,318.18	8.64	43.66	4	20.20	3	15.15
Fort Adams, R. I	197	154	781.73	5.00	25.38	1	5.08	5	25.38
Fort McPherson, Ga	188	468	2,489.36	11.50	61.16	2	10.64	1	5.32
Angel Island, Cal	188	173	920.21	5.16	27.44	1	5.32	9	47.87
Fort Lowell, Ariz	170	207	1,217.65	5.82	34.25	1	5.88	7	41.18
Fort Missoula, Mont	168	216	1,285.71	4.86	28.93	1	5.95	3	17.86
Fort Columbus, N. Y	164	176	1,073.17	6.44	39.27	2	12.20	8	48.78
Fort Shaw, Mont	159	182	1,144.65	5.58	35.06	2	12.58	4	25.16
Fort McKinney, Wyo	146	124	849.32	4.49	30.76	1	6.85	1	6.85
Fort Bridger, Wyo	142	150	1,056.34	4.36	30.68	1	7.04	....	......
Fort Union, N. Mex	142	110	774.65	3.77	26.53	....	......	2	14.08
Fort Myer, Va	137	185	1,350.36	5.10	37.20	2	14.60	2	14.60
Fort Brown, Tex	135	254	1,881.48	8.81	65.23	1	7.41	3	22.22
Fort Stanton, N. Mex	133	221	1,661.65	9.02	67.83	2	15.04	4	30.08
Fort McIntosh, Tex	130	96	738.46	3.29	25.31	3	23.08	1	7.69
Fort Bliss, Tex	123	120	975.61	2.76	22.47	....	......	6	48.78
Fort Elliott, Tex	122	242	1,983.61	9.36	76.71	3	24.59	3	24.59
Fort Bowie, Ariz	119	239	2,008.40	4.76	39.99	....	......	1	8.40
Fort Ringgold, Tex	119	103	865.55	3.17	26.61	1	8.40	1	8.40
Leavenworth Prison	115	108	939.13	2.13	18.53	....	......	2	17.39
Fort Niagara, N. Y	114	129	1,131.58	3.28	28.74	2	17.54	2	17.54
Fort Sully, S. Dak	112	105	937.50	3.89	34.74	1	8.93	3	26.79
Fort Washakie, Wyo	111	226	2,036.04	5.55	49.98	....	......	3	27.03

TABLE IV.—*Giving a general view of the results of disease and injury at each of the various military stations, etc.*—Continued.

GROUP 4—Continued.

Military stations.	Mean strength.	Admissions.		Constantly non-effective.		Deaths.		Discharges.	
		No.	Ratio per 1,000.	No.	Ratio per 1,000.	No.	Ratio per 1,000.	No.	Ratio per 1,000.
Mount Vernon Barracks, Ala	111	169	1,522.52	7.62	68.57	2	18.02	1	9.01
Fort Wadsworth, N. Y	111	119	1,072.07	3.30	29.69	1	9.01	1	9.01
Fort Marcy, N. Mex	110	133	1,209.09	3.45	31.36	1	9.09	1	9.09
Fort Thomas, Ariz	106	157	1,481.13	3.76	35.49	1	9.43	....	......
Boisé Barracks, Idaho	105	121	1,152.38	3.47	33.01	.....	....	2	19.05
Fort Randall, S. Dak	102	123	1,205.88	3.55	34.76	.....	....	.....	......
Fort Sheridan, Ill	101	98	970.30	2.25	22.30	1	9.90	2	19.80
Summary	4,276	5,491	1,284.14	162.40	37.98	37	8.65	94	21.98

GROUP 5.—Sixty-four stations, garrisoned by 1 to 100 men each. Average, 54.

Military stations.	Mean strength.	Admissions. No.	Admissions. Ratio per 1,000.	Constantly non-effective. No.	Constantly non-effective. Ratio per 1,000.	Deaths. No.	Deaths. Ratio per 1,000.	Discharges. No.	Discharges. Ratio per 1,000.
Fort McHenry, Md	99	137	1,383.84	6.31	63.73	.....	....	5	50.50
Camp Poplar River, Mont	97	173	1,783.51	3.25	33.47	2	20.62	.....	......
Fort Abraham Lincoln, N. Dak	95	121	1,273.68	3.04	31.95	.....	....	2	21.05
Fort Brady, Mich	95	121	1,273.68	2.99	31.49	.....	....	.....	......
Fort Porter, N. Y	95	96	1,010.53	3.13	33.28	1	10.53	1	10.53
Fort Mackinac, Mich	94	151	1,606.38	2.51	26.73	.....	....	2	21.28
Jackson Barracks, La	92	199	2,163.04	6.50	70.64	2	21.74	2	21.74
Alcatraz Island, Cal	92	99	1,076.09	4.09	44.43	.....	....	2	21.74
Fort Barrancas, Fla	86	144	1,674.42	5.03	58.49	2	23.26	1	11.63
Fort Warren, Mass	86	90	1,046.51	2.98	34.63	1	11.63	1	11.63
Camp Pilot Butte, Wyo	78	111	1,423.08	2.11	27.01	1	12.82	.....	......
Camp Oklahoma, Okla	78	88	1,128.21	3.09	39.62	1	12.82	.....	......
Fort Schuyler, N. Y	78	68	871.79	2.62	33.58	.....	....	2	25.64
Fort Maginnis, Mont	76	132	1,736.84	3.45	45.35	1	13.16	2	26.32
Benicia Barracks, Cal	76	97	1,276.32	3.19	42.03	.....	....	2	26.32
Fort Pembina, N. Dak	75	60	800.00	1.15	15.38	.....	....	.....	......
Fort Bidwell, Cal	71	101	1,422.54	1.65	23.31	.....	....	1	14.08
Fort Crawford, Colo	67	73	1,089.55	1.84	27.52	.....	....	2	29.85
St. Francis Barracks, Fla	65	131	2,015.38	4.34	66.76	.....	....	4	61.54
Camp Sheridan, Wyo	65	82	1,261.54	2.56	39.41	.....	....	2	30.77
Fort Totten, N. Dak	65	67	1,030.77	2.08	32.03	.....	....	.....	......
Fort Mason, Cal	64	66	1,031.25	2.73	42.51	.....	....	4	62.50
Fort Canby, Wash	63	71	1,126.98	1.59	25.22	.....	....	1	15.87
Newport Barracks, Ky	62	107	1,725.81	3.22	51.92	.....	....	1	16.13
San Diego Barracks, Cal	61	80	1,311.48	7.47	122.48	2	32.79	5	81.97
Rock Island Arsenal, Ill	60	89	1,483.33	1.82	30.37	1	16.67	3	50.00
Watervliet Arsenal, N. Y	60	82	1,366.67	1.47	24.57	.....	....	2	33.33
Little Rock Barracks, Ark	59	102	1,728.81	3.35	56.70	2	33.90	2	33.90
Fort Bennett, S. Dak	58	51	879.31	1.55	26.64	2	34.48	.....	......
Fort Townsend, Wash	58	48	827.59	.97	16.77	.....	....	.....	......
Chicago, Headquarters Division of the Missouri	58	16	275.86	.82	14.22	2	34.48	1	17.24
Camp at Eagle Pass, Tex	56	115	2,053.57	3.34	59.59	.....	....	1	17.86
Fort Preble, Me	54	72	1,333.33	1.72	31.91	.....	....	.....	......
Camp Peña Colorado, Tex	54	43	796.30	1.07	19.74	.....	....	.....	......
Fort Trumbull, Conn	52	58	1,115.38	1.78	34.19	.....	....	1	19.23
Fort McDowell, Ariz	52	53	1,019.23	1.63	31.35	.....	....	1	19.23
Fort Verde, Ariz	52	46	884.62	1.12	21.44	.....	....	3	57.69
Benicia Arsenal, Cal	52	40	769.23	1.40	26.87	1	19.23	3	57.69
Fort Hancock, Tex	49	58	1,183.67	2.20	44.95	.....	....	1	20.41
Plattsburg Barracks, N. Y	47	66	1,404.26	1.64	34.92	.....	....	1	21.28
Fort Gibson, Ind. T	47	22	468.09	1.15	24.37	1	21.28	.....	......
Fort Wood, N. J	46	23	500.00	.13	2.92	.....	....	.....	......
Fort Ontario, N. Y	43	73	1,697.67	2.15	49.89	.....	....	4	93.02
Camp Guthrie, Okla	43	55	1,279.07	1.37	31.86	.....	....	1	23.26
Fort Gaston, Cal	40	46	1,150.00	1.10	27.40	.....	....	1	25.00
Frankford Arsenal, Pa	38	53	1,394.74	1.83	48.16	2	52.63	1	26.32
Fort Pierre, S. Dak	34	33	970.59	.82	24.01	1	29.41	.....	......
Watertown Arsenal, Mass	33	35	1,060.61	.79	23.91	.....	....	.....	......
Sandy Hook, N. J	32	58	1,812.50	.55	17.04	.....	....	.....	......
San Antonio (headquarters), Tex	32	5	156.25	.13	3.94	.....	....	.....	......
St. Louis, Mo., Headquarters Department of the Missouri.	32	3	93.75	.06	1.88	.....	....	.....	......
Fort Thomas, Ky	31	40	1,290.32	.57	16.35	.....	....	.....	......
Allegheny Arsenal, Pa	29	20	689.66	.85	29.48	1	34.48	.....	......

TABLE IV.—*Giving a general view of the results of disease and injury at each of the various military stations, etc.*—Continued.

GROUP 5—Continued.

Military stations.	Mean strength.	Admissions.		Constantly non-effective.		Deaths.		Discharges.	
		No.	Ratio per 1,000.	No.	Ratio per 1,000.	No.	Ratio per 1,000.	No.	Ratio per 1,000.
Fort Mojave, Ariz	28	49	1,750.00	2.17	75.24	....	......	....	......
National Armory, Springfield, Mass.	28	15	535.71	.56	20.06	1	35.71	....	......
Augusta Arsenal, Ga	26	24	923.08	1.70	65.54	....	......	2	76.92
Indianapolis Arsenal, Ind	25	46	1,840.00	1.42	56.99	1	40.00	1	40.00
Fort Selden, N. Mex	17	17	1,000.00	.36	21.43	1	58.82	1	58.82
Kennebec Arsenal, Me	15	29	1,933.33	.39	26.48	1	66.67	....	......
Fort Laramie, Wyo	14	32	2,285.71	.30	21.72	....	......	....	......
Government Saw Mill, Utah	14	19	1,357.14	.19	13.89	....	......	....	......
Camp Del Rio, Tex	13	21	1,615.38	.34	26.34	....	......	....	......
Camp Langtry, Tex	13	13	1,000.00	.43	33.09	....	......	....	......
Fort Klamath, Oregon	5	5	1,000.00	.10	20.27	....	......	....	......
Summary	3,474	4,340	1,249.28	128.14	36.89	30	8.64	72	20.73

GROUP 6.—Field.

Military stations.	Mean strength.	Admissions.		Constantly non-effective.		Deaths.		Discharges.	
		No.	Ratio per 1,000.	No.	Ratio per 1,000.	No.	Ratio per 1,000.	No.	Ratio per 1,000.
Department of Dakota	767	771	1,005.22	10.79	14.06	35	45.63	1	1.30
Department of the Platte	126	106	841.27	.87	6.87	1	7.94	....	......
Department of California	119	125	1,050.42	2.06	17.31	....	......	2	16.81
Department of Texas	83	55	662.65	.87	10.53	....	......	....	......
Department of the Missouri	49	64	1,306.12	.82	16.77	....	......	3	61.22
Department of the East	35	84	2,400.00	.55	15.58	....	......	....	......
Department of the Columbia	23	26	1,130.43	.22	9.41	....	......	....	......
Department of Arizona	8	4	500.00	.05	6.51	....	......	....	......
Summary	1,210	1,235	1,020.66	16.22	13.41	36	29.75	6	4.96
Hot Springs, Ark	47	18	382.98	38.19	812.53	3	63.83	31	659.57
At large	......	......	....	....	......	15	......	32	......
Total for the Army	24,234	33,546	1,384.25	1,035.14	42.71	231	......	614	......

SUMMARY OF THE SIX GROUPS.

Range of the several means in each group.	Number of posts in each group and average strength of each.		Mean strength	Ratios per 1,000 of mean strength.				Daily average sick.	
	No.	Average strength.		Admissions.	Constantly non-effective.	Deaths.	Discharges.	All posts.	Average for each post.
Group 1, 400 to 700 men	14	474	6,640	1,479.09	48.36	6.63	27.86	321.18	22.94
Group 2, 300 to 400 men	11	347	3,817	1,518.73	41.70	8.38	16.25	159.18	14.47
Group 3, 200 to 300 men	19	251	4,770	1,434.80	43.99	7.34	27.67	209.84	11.04
Group 4, 100 to 200 men	31	138	4,276	1,284.14	37.98	8.65	21.98	162.40	5.24
Group 5, 1 to 100 men	64	54	3,474	1,249.28	36.89	8.64	20.73	128.14	2.00
Group 6, field	....	....	1,210	1,020.66	13.41	29.75	4.96	16.22	......

TABLE V.—*Twenty posts having the highest admission rates for the year 1890, also their admission rates for the years 1885 to 1889, inclusive.*

Names of stations.	Mean strength.	Ratios per 1,000 of mean strength.				Admission rates per 1,000 of mean strength.				
		Admissions.	Deaths.	Discharges for disability.	Constantly noneffective.	1889.	1888.	1887.	1886.	1885.
Fort Sill, Okla	330	2,551.52	12.12	36.36	47.41	1,797.10	1,592.06	1,744.68	1,642	2,211
Fort McPherson, Ga	188	2,489.36	10.64	5.32	61.16	3,416.67	......	......	......	......
Fort Sam Houston, Tex	606	2,430.69	8.25	37.95	63.25	1,262.61	943.60	1,570.67	1,192	1,293
Fort Apache, Ariz	242	2,371.90	16.53	45.45	55.51	1,029.41	933.67	968.42	1,934	941
Fort Grant, Ariz	327	2,207.95	21.41	15.29	50.30	967.85	1,010.95	1,703.52	1,520	1,448
Jackson Barracks, La	92	2,163.04	21.74	21.74	70.64	1,875.00	910.45	884.61	937	1,247
Camp at Eagle Pass, Tex	56	2,053.57	......	17.86	59.59	1,145.45	788.46	821.43	1,143	......
Fort Washakie, Wyo	111	2,036.04	......	27.03	49.98	2,007.94	1,706.35	1,129.03	1,008	1,277
St. Francis Barracks, Fla	65	2,015.38	......	61.54	66.76	1,568.97	1,378.79	1,718.75	1,942	1,705
Fort Bowie, Ariz	119	2,008.40	.....	8.40	39.99	1,303.92	884.89	966.67	482	735
Fort Elliott, Tex	122	1,983.61	24.59	24.59	76.71	1,761.91	1,245.81	884.82	381	486
Fort Reno, Okla	296	1,922.30	13.51	20.27	56.53	1,474.51	1,378.55	1,607.97	1,543	2,004
Fort Robinson, Nebr	393	1,895.67	25.45	7.63	44.51	1,454.33	925.56	1,283.08	1,593	1,297
Fort Brown, Tex	135	1,881.48	7.41	22.22	65.23	3,710.34	3,812.50	1,583.33	1,797	2,181
Columbus Barracks, Ohio	502	1,876.49	5.98	63.75	77.55	2,318.86	2,075.66	1,942.36	1,550	1,832
Fort Sherman, Idaho	272	1,838.24	11.03	18.38	44.15	1,308.94	1,271.19	1,031.75	916	1,077
Willets Point, N. Y. H	400	1,812.50	2.50	10.00	43.10	2,388.45	2,243.70	2,342.13	2,055	2,782
Fort Wingate, N. Mex	359	1,788.30	5.57	33.43	60.82	1,036.46	955.41	1,424.62	1,538	1,771
Camp Poplar River, Mont	97	1,783.51	20.62	....	33.47	1,177.08	1,378.95	1,886.60	2,030	1,694
Newport Barracks, Ky	62	1,725.81	......	16.13	51.92	1,134.62	581.40	800.00	1,023	696
U. S. Army	24,234	1,384.25	8.66	23.01	42.71	1,315.02	1,270.73	1,246.88	1,263	1,355

TABLE VI.—*Twenty posts having the highest non-effective rates for the year* 1890, *also their non-effective rates for the years* 1885 *to* 1889, *inclusive.*

Names of stations.	Mean strength.	Constantly non-effective per 1,000 mean strength.	Average sick daily.	Average of days each case was treated.	Constantly non-effective per 1,000 of mean strength.				
					1889	1888.	1887.	1886.	1885.
San Diego Barracks, Cal	61	122.48	7.47	34.09	77.07	53.87	54.31	96	182
Columbus Barracks, Ohio	502	77.55	38.91	15.08	92.74	81.87	74.51	63	82
Fort Elliott, Tex	122	76.71	9.36	14.82	67.64	29.95	29.73	18	18
Jackson Barracks, La	92	70.64	6.50	11.92	35.75	17.78	19.07	28	66
Mount Vernon Barracks, Ala	111	68.57	7.61	16.44	54.86	37.82	36.71	41	48
Fort Stanton, N. Mex	133	67.83	9.02	14.90	39.13	25.05	39.50	36	39
St. Francis Barracks, Fla	65	66.76	4.34	12.10	32.40	34.57	40.95	44	44
Fort Clark, Tex	481	65.25	31.38	14.27	60.05	51.71	36.45	57	57
Fort Brown, Tex	135	65.23	8.81	12.65	114.44	96.48	76.94	75	79
Fort McHenry, Md	99	63.73	6.31	16.81	53.71	62.99	59.67	30	46
Fort Sam Houston, Tex	606	63.25	38.33	9.50	50.64	38.41	51.59	39	35
Whipple Barracks, Ariz	241	61.80	14.89	13.39	56.20	46.37	35.05	23	34
Fort McPherson, Ga	188	61.16	11.50	8.97	72.80	....	....	......	......
Fort Wingate, N. Mex	359	60.82	21.84	12.41	33.03	37.30	30.51	53	50
Camp at Eagle Pass, Tex	56	59.59	3.34	10.59	60.17	38.15	37.57	23	......
Fort Barrancas, Fla	86	58.49	5.03	12.75	48.42	33.98	34.06	38	45
Fort Logan, Colo	278	58.49	16.26	17.56	70.78	76.95	26.03	......	......
Fort Custer, Mont	331	57.91	19.17	15.31	49.72	49.58	47.81	46	42
Fort Reno, Okla	296	56.53	16.73	10.73	61.55	46.85	46.81	37	56
Fort Apache, Ariz	242	55.51	13.43	8.54	36.53	27.60	40.14	41	26
U. S. Army	24,234	42.71	1,035.14	11.26	44.12	41.91	42.38	39	41

TABLE VII.—*Twenty posts having the highest admission rates for disease, excluding venereal diseases, vaccina, and alcoholism, together with their ratios for deaths, discharges, and constant non-effectiveness; also, the corresponding average rates of the Army, year,* 1890.

Names of stations.	Mean strength.	Ratios per 1,000 of mean strength.			
		Admissions.	Deaths.	Discharges.	Constantly non-effective.
Fort Sill, Ind. T	330	2,109.10	....	27.27	36.25
Fort Sam Houston, Tex	606	1,917.49	6.60	31.35	45.78
Fort Apache, Ariz	242	1,830.57	8.26	28.93	34.84
Fort McPherson, Ga	188	1,739.35	5.32	....	30.72
Fort Grant, Ariz	327	1,663.61	15.29	12.23	32.09
St. Francis Barracks, Fla	65	1,646.16	....	61.54	49.97
Fort Elliott, Tex	122	1,598.36	24.59	24.59	53.63
Fort Robinson, Nebr	393	1,493.65	20.36	7.63	32.32
Fort Bowie, Ariz	119	1,487.39	....	8.40	28.21
Fort Reno, Ind. T	296	1,483.11	6.76	16.89	42.39
Jackson Barracks, La	92	1,456.54	21.74	10.87	37.35
Fort Washakie, Wyo	111	1,414.41	....	18.02	30.21
Camp Poplar River, Mont	97	1,340.20	10.31	....	19.57
Fort Sherman, Idaho	272	1,338.23	7.35	11.03	32.32
Mount Vernon Barracks, Ala	111	1,324.31	9.01	9.01	64.17
Fort Wingate, N. Mex	359	1,323.12	....	22.29	37.89
Fort Monroe, Va	433	1,297.92	....	4.62	28.31
San Carlos, Ariz	250	1,280.00	4.00	20.00	26.35
Fort Hamilton, N. Y	198	1,257.59	....	45.45	30.92
Fort Clark, Tex	481	1,247.40	2.08	29.10	42.73
U. S. Army	24,234	992.16	5.57	19.68	28.47

TABLE VIII.—*Twenty posts having the highest non-effective rates for disease, excluding venereal diseases, vaccina, and alcoholism, together with the average number sick daily, and average duration of each case; also the corresponding average rates of the Army, year* 1890.

Names of stations.	Mean strength.	Constantly non-effective.	Average number of sick daily.	Average number of days each case was treated.
San Diego Barracks, Cal	61	116.51	7.1	39.3
Mount Vernon Barracks, Ala	111	64.17	7.1	17.7
Fort Elliott, Tex	122	53.63	6.5	12.2
St. Francis Barracks, Fla	65	49.97	3.2	11.0
Fort Stanton, N. Mex	133	48.82	6.5	16.3
Fort Sam Houston, Tex	606	45.78	27.7	8.7
Fort McHenry, Md	99	44.92	4.4	15.9
Whipple Barracks, Ariz	241	44.58	10.7	14.5
Fort Clark, Tex	481	42.73	20.6	12.5
Fort Reno, Ind. T	296	42.39	12.5	10.4
Fort Custer, Mont	331	39.63	13.1	13.2
Fort Barrancas, Fla	86	39.27	3.4	12.6
Fort Davis, Tex	201	38.34	7.7	15.8
Fort Wingate, N. Mex	359	37.89	13.6	10.5
Benicia Barracks, Cal	76	37.74	2.9	13.3
Jackson Barracks, La	92	37.35	3.4	9.4
Fort Bayard, N. Mex	292	36.98	10.8	11.7
Fort Logan, Colo	278	36.56	10.2	16.8
Fort Sill, Ind. T	330	36.25	12.0	6.4
Fort Ontario, N. Y	43	35.74	1.5	11.9
U. S. Army	24,234	28.47	689.90	10.5

TABLE IX.—*The military posts in each department, showing the rates of admission, death, discharge, and constant non-effectiveness for disease, not including venereal diseases, vaccina, nor alcoholism, year 1890.*

DEPARTMENT OF THE EAST.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective.
Fort McPherson, Ga	188	1,739.35	5.32	....	30.72
Kennebec Arsenal, Me	15	1,733.33	66.67	....	23.93
Indianapolis Arsenal, Ind	25	1,680.00	40.00	....	49.75
St. Francis Barracks, Fla	65	1,646.16	....	61.54	49.97
Sandy Hook, N. J	32	1,468.75	....	....	14.21
Jackson Barracks, La	92	1,456.54	21.74	10.87	37.35
Mount Vernon Barracks, Ala	111	1,324.31	9.01	9.01	64.17
Frankford Arsenal, Pa	38	1,315.79	52.63	26.32	45.35
Fort Monroe, Va	433	1,297.92	....	4.62	28.31
Fort Hamilton, N. Y	198	1,257.59	....	45.45	30.92
Willets Point, N. Y	400	1,230.00	2.50	10.00	26.36
Fort Mackinac, Mich	94	1,180.85	....	10.64	15.01
Newport Barracks, Ky	62	1,177.41	....	16.18	32.18
Fort Barrancas, Fla	86	1,139.52	....	11.63	39.27
West Point, N. Y	378	1,137.56	2.65	2.65	23.75
Madison Barracks, N. Y	248	1,129.03	4.03	4.03	22.72
Fort Ontario, N. Y	43	1,093.03	....	46.50	35.74
Fort McHenry, Md	99	1,030.30	....	20.20	44.92
Fort Myer, Va	137	1,021.89	14.60	7.30	26.22
Columbus Barracks, Ohio	502	1,013.96	3.99	15.94	32.24
Watervliet Arsenal, N. Y	60	1,000.00	....	33.33	17.90
Washington Barracks, D. C	255	984.30	3.92	66.67	34.17
Fort Wayne, Mich	211	957.36	....	14.22	28.84
Plattsburg Barracks, N. Y	47	936.17	....	21.28	23.72
Davids Island, N. Y	434	884.79	2.30	11.52	27.49
Augusta Arsenal, Ga	26	884.62	....	76.92	64.91
Fort Niagara, N. Y	114	877.20	8.77	17.54	22.80
Fort Brady, Mich	95	863.16	....	....	18.81
Fort Preble, Me	54	796.30	....	....	15.88
Fort Wadsworth, N. Y	111	783.78	9.01	9.01	21.46
Fort Columbus, N. Y	164	749.99	12.20	36.58	26.76
Fort Thomas, Ky	31	741.93	....	....	8.31
Fort Trumbull, Conn	52	730.77	....	19.23	24.03
Watertown Arsenal, Mass	33	727.28	....	....	19.76
Fort Porter, N. Y	95	705.27	10.53	....	26.07
Fort Warren, Mass	86	697.68	11.63	11.63	22.46
Fort Adams, R. I	197	548.21	5.08	20.30	17.90
Fort Schuyler, N. Y	78	525.64	....	12.82	22.77
Springfield Armory, Mass	28	464.28	35.71	....	11.32
Allegheny Arsenal, Pa	29	448.27	....	....	26.45
Fort Wood, N. Y	46	347.81	....	....	1.25
Field	35	1,742.86	....	....	10.09
Department of the East	5,527	1,055.93	4.52	15.57	28.15

DEPARTMENT OF THE PLATTE.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective.
Fort Laramie, Wyo	14	2,071.42	....	....	18.98
Fort Robinson, Nebr	393	1,493.65	20.36	7.63	32.32
Fort Washakie, Wyo	111	1,414.41	....	18.02	30.21
Fort Du Chesne, Utah	260	1,130.77	....	15.38	21.96
Fort Niobrara, Nebr	378	1,087.29	2.65	10.58	23.71
Camp Pilot Butte, Wyo	78	948.72	12.82	....	19.00
Fort Sidney, Nebr	204	887.26	4.90	14.71	31.26
Government Saw Mill, Utah	14	785.72	....	....	5.87
Fort D. A. Russell, Wyo	348	775.87	2.87	5.75	19.94
Fort Douglas, Utah	423	758.83	7.09	4.73	24.24
Fort Bridger, Wyo	142	654.94	7.04	....	20.35
Fort McKinney, Wyo	146	547.93	....	....	17.68
Fort Omaha, Nebr	415	460.23	7.23	28.92	19.00
Field	126	500.00	....	....	3.59
Department of the Platte	3,052	904.98	6.22	10.48	22.91

TABLE IX.—*The military posts in each department, showing the rates of admission, death, discharge, and constant noneffectiveness for disease, etc.*—Continued.

DEPARTMENT OF DAKOTA.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective.
Camp Poplar River, Mont	97	1,340.20	10.31	....	19.57
Fort Maginnis, Mont	76	1,302.63	13.16	26.31	28.44
Fort Yates, N. Dak	287	1,139.37	3.48	31.36	34.20
Fort Custer, Mont	331	1,096.67	....	9.06	39.63
Fort Missoula, Mont	168	982.14	5.95	5.95	18.40
Fort Randall, S. Dak	102	980.39	....	....	26.22
Fort Shaw, Mont	159	918.24	6.29	18.87	27.78
Fort Assinniboine, Mont	437	887.87	2.29	20.59	21.35
Camp Sheridan, Wyo	65	876.94	....	30.77	27.52
Fort Totten, N. Dak	65	876.93	....	....	28.87
Fort Pierre, S. Dak	34	823.53	....	....	17.81
Fort Snelling, Minn	290	762.07	10.34	24.14	24.94
Fort Abraham Lincoln, N. Dak	95	757.90	....	21.05	21.11
Fort Buford, N. Dak	259	741.32	....	27.03	20.70
Fort Sully, S. Dak	112	669.64	....	8.93	22.60
Fort Meade, S. Dak	308	649.36	....	22.73	24.50
Fort Bennett, S. Dak	58	637.93	34.48	....	18.46
Fort Pembina, N. Dak	75	600.01	....	....	13.62
Fort Keogh, Mont	347	406.35	2.88	2.88	19.61
Field	767	642.76	2.61	1.30	8.33
Department of Dakota	4,132	807.36	3.39	13.31	21.96

DEPARTMENT OF THE MISSOURI.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective.
Fort Sill, Okla	330	2,109.10	....	27.27	36.25
Fort Elliott, Tex	122	1,598.36	24.59	24.59	53.63
Fort Reno, Okla	296	1,483.11	6.76	16.89	42.39
Little Rock Barracks, Ark	59	1,305.07	33.90	16.95	38.40
Rock Island Arsenal, Ill	60	1,183.33	16.67	50.00	26.12
Fort Lewis, Colo	198	929.30	10.10	15.15	25.29
Fort Supply, Ind. T	209	885.18	....	28.71	17.96
Camp Guthrie, Okla	43	883.73	....	23.26	19.39
Fort Leavenworth (post), Kans	586	878.85	10.24	35.84	35.48
Fort Riley, Kans	642	858.25	....	14.02	22.12
Fort Logan, Colo	278	820.14	17.99	....	36.56
Fort Leavenworth (prison), Kans	115	817.38	....	17.39	13.67
Fort Crawford, Colo	67	746.27	....	29.85	20.77
Camp Oklahoma, Okla	78	705.13	....	....	18.30
Fort Sheridan, Ill	101	702.98	9.90	19.80	13.94
Jefferson Barracks, Mo	406	512.31	2.46	22.17	17.73
Fort Gibson, Ind. T	47	382.96	....	....	14.69
Chicago (Headquarters Div. Mo.), Ill	58	275.86	34.48	17.24	14.22
St. Louis (Headquarters), Mo	32	93.75	....	....	1.88
Field	49	959.18	....	40.82	11.97
Department of the Missouri	3,776	990.75	6.62	20.92	27.76

DEPARTMENT OF TEXAS.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective.
Fort Sam Houston, Tex	606	1,917.49	6.60	31.35	45.78
Camp Del Rio, Tex	13	1,307.71	....	....	22.13
Fort Clark, Tex	481	1,247.40	2.08	29.10	42.73
Camp at Eagle Pass, Tex	56	1,232.13	....	17.86	25.59
Fort Brown, Tex	135	1,200.02	7.41	14.81	34.34
Fort Davis, Tex	201	915.44	....	9.95	38.34
Fort Hancock, Tex	49	857.14	....	20.41	32.59
Camp Langtry, Tex	13	769.23	....	....	26.13
Fort Bliss, Tex	123	764.23	....	40.65	18.24
Fort Ringgold, Tex	119	613.44	8.40	8.40	20.64
Fort McIntosh, Tex	130	530.76	15.38	7.69	14.85
Camp Pena Colorado, Tex	54	500.00	....	....	12.6[illegible]
San Antonio, Tex	32	156.25	....	....	3.94
Field	83	397.60	....	....	6.55
Department of Texas	2,095	1,215.75	4.29	21.96	34.50

TABLE IX.—*The military posts in each department, showing the rates of admission, death, discharge, and constant noneffectiveness for disease, etc.*—Continued.

DEPARTMENT OF CALIFORNIA.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective.
Fort Bidwell, Cal	71	1,112.69	....	14.08	15.62
Benicia Barracks, Cal	76	1,039.47	....	26.32	37.74
Presidio, San Francisco, Cal	455	956.05	2.20	19.78	27.93
Alcatraz Island, Cal	92	750.00	....	10.87	19.74
Fort Mason, Cal	64	703.14	....	62.50	33.23
Fort Gaston, Cal	40	650.00	....	25.00	15.35
Benicia Arsenal, Cal	52	615.38	....	38.46	20.13
Angel Island, Cal	188	601.07	5.32	31.91	13.61
Field	119	705.89	....	16.81	10.97
Department of California	1,157	831.46	1.73	24.20	22.60

DEPARTMENT OF THE COLUMBIA.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective.
Fort Sherman, Idaho	272	1,338.23	7.35	11.03	32.32
Fort Klamath, Oregon	5	1,000.00	....	....	20.27
Vancouver Barracks, Wash	420	885.71	7.14	19.05	26.20
Fort Walla Walla, Wash	318	867.93	3.14	12.58	25.44
Fort Spokane, Wash	200	865.00	....	20.00	28.87
Boisé Barracks, Idaho	105	828.57	....	19.05	26.54
Fort Canby, Wash	63	809.52	....	15.87	14.17
Fort Townsend, Wash	58	517.25	....	....	3.60
Field	23	782.60	....	....	4.76
Department of the Columbia	1,464	939.88	4.10	15.03	25.98

DEPARTMENT OF ARIZONA.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective.
Fort Apache, Ariz	242	1,830.57	8.26	28.93	34.84
Fort Grant, Ariz	327	1,663.61	15.29	12.23	32.09
Fort Mojave, Ariz	28	1,500.00	....	....	61.15
Fort Bowie, Ariz	119	1,487.39	....	8.40	28.21
Fort Wingate, N. Mex	359	1,323.12	....	22.29	37.89
San Carlos, Ariz	250	1,280.00	4.00	20.00	26.35
Fort Thomas, Ariz	106	1,179.24	9.43	....	27.79
Fort Bayard, N. Mex	292	1,150.69	13.70	13.70	36.98
Whipple Barracks, Ariz	241	1,124.50	4.15	53.94	44.58
Fort Stanton, N. Mex	133	1,090.23	....	30.08	48.82
San Diego Barracks, Cal	61	1,081.97	32.79	81.97	116.51
Fort Selden, N. Mex	17	882.36	....	58.82	20.30
Fort Lowell, Ariz	170	847.05	....	29.42	21.75
Fort Marcy, N. Mex	110	754.55	9.09	9.09	24.96
Fort McDowell, Ariz	52	750.00	....	19.23	20.60
Fort Verde, Ariz	52	673.08	....	38.46	10.60
Fort Huachuca, Ariz	275	527.27	....	21.81	16.58
Fort Union, N. Mex	142	422.53	....	7.04	10.68
Field	8	250.00	....	....	3.77
Department of Arizona	2,984	1,161.85	5.70	22.78	32.42

TABLE X.—*The monthly prevalence of disease among the white and colored troops in the Army during the year* 1890.

Months.		Admitted to sick report.							Constantly non-effective.					
		Number.			Ratios per 1,000 of mean strength.				Days.			Ratios per 1,000 of mean strength.		
		Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.	Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.	Mean strength.	Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.	Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.
Jan..	W.	599	4,853	5,452	25.97	210.43	236.40	23,062	8,479	35,598	44,077	11.86	49.79	61.65
	C..	86	740	826	35.27	303.53	338.80	2,438	1,307	3,917	5,224	17.29	51.83	69.12
	T.	685	5,593	6,278	26.86	219.33	246.20	25,500	9,786	39,515	49,301	12.38	49.99	62.37
Feb..	W.	580	1,877	2,457	24.79	80.24	105.03	23,392	8,204	21,910	30,114	12.53	33.45	45.98
	C.	79	338	417	32.48	138.98	171.46	2,432	1,435	2,628	4,063	21.07	38.59	59.67
	T.	659	2,215	2,874	25.52	85.77	111.29	25,824	9,639	24,538	34,177	13.33	33.94	47.27
Mar.	W	695	1,615	2,310	29.94	69.57	99.51	23,213	9,648	21,029	30,677	13.41	29.22	42.63
	C..	91	222	313	37.89	92.42	130.31	2,402	1,599	2,167	3,766	21.47	29.10	50.57
	T.	786	1,837	2,623	30.69	71.72	102.40	25,615	11,247	23,196	34,443	14.16	29.21	43.37
Apr.	W.	674	1,379	2,053	29.31	59.97	89.29	22,993	8,960	17,827	26,787	12.99	25.84	38.83
	C..	90	194	284	37.10	79.97	117.06	2,426	1,300	1,998	3,298	17.86	27.45	45.31
	T.	764	1,573	2,337	30.06	61.88	91.94	25,419	10,260	19,825	30,085	13.45	26.00	39.45
May.	W.	714	1,414	2,128	31.58	62.55	94.13	22,607	8,810	16,499	25,309	12.57	23.54	36.11
	C..	64	195	259	27.47	83.69	111.16	2,330	1,030	2,128	3,158	14.26	29.46	43.72
	T.	778	1,609	2,387	31.20	64.52	95.72	24,937	9,840	18,627	28,467	12.73	24.09	36.82
June.	W.	641	1,575	2,216	28.82	70.81	99.63	22,243	8,153	17,177	25,330	12.22	25.74	37.96
	C..	64	172	236	28.55	76.72	105.26	2,242	825	1,934	2,759	12.27	28.75	41.02
	T.	705	1,747	2,452	28.79	71.35	100.14	24,485	8,978	19,111	28,089	12.22	26.02	38.24
July.	W.	793	1,885	2,678	36.89	87.69	124.58	21,496	9,413	18,850	28,263	14.12	28.29	42.41
	C..	82	205	287	36.87	92.18	129.05	2,224	898	1,973	2,871	13.02	28.62	41.64
	T.	875	2,090	2,965	36.89	88.11	125.00	23,720	10,311	20,823	31,134	14.02	28.32	42.34
Aug.	W.	622	1,702	2,324	29.23	79.99	109.22	21,278	8,451	19,079	27,530	12.81	28.92	41.73
	C..	74	202	276	32.56	88.87	121.43	2,273	974	1,876	2,850	13.82	26.62	40.45
	T.	696	1,904	2,600	29.55	80.85	110.40	23,551	9,425	20,956	30,380	12.91	28.70	41.61
Sept.	W.	659	1,594	2,253	31.73	76.75	108.48	20,769	8,260	18,186	26,446	13.26	29.19	42.44
	C..	86	194	280	38.84	87.62	126.47	2,214	1,048	2,011	3,059	15.78	30.28	46.05
	T	745	1,788	2,533	32.42	77.80	110.21	22,983	9,308	20,197	29,505	13.50	29.29	42.79
Oct..	W.	601	1,332	1,933	28.95	64.16	93.11	20,760	8,250	17,499	25,749	12.82	27.19	40.01
	C..	87	196	283	37.89	85.37	123.26	2,296	950	2,145	3,095	13.35	30.14	43.48
	T.	688	1,528	2,216	29.84	66.27	96.11	23,056	9,200	19,644	28,844	12.87	27.48	40.36
Nov.	W.	569	1,256	1,825	27.09	61.36	88.45	20,634	8,485	15,335	23,820	13.71	24.77	38.48
	C..	101	218	319	43.42	93.72	137.15	2,326	1,085	2,268	3,353	15.55	32.50	48.05
	T.	660	1,484	2,144	28.75	64.63	93.38	22,960	9,570	17,603	27,173	13.89	25.56	39.45
Dec..	W	618	1,272	1,890	30.19	62.15	92.34	20,467	8,271	15,024	23,295	13.04	23.68	36.72
	C..	75	172	247	32.75	75.11	107.86	2,290	1,035	1,899	2,934	14.58	26.75	41.33
	T.	693	1,444	2,137	30.45	63.45	93.91	22,757	9,306	16,923	26,229	13.19	23.99	37.18
Year	W.	7,755	21,764	29,519	353.95	993.33	1,347.28	21,910	108,384	234,013	337,397	12.93	29.26	42.19
	C..	979	3,048	4,027	421.26	1,311.53	1,732.79	2,324	13,486	26,944	40,430	15.90	31.76	47.66
	T.	8,734	24,812	33,546	360.40	1,023.85	1,384.25	24,234	116,870	260,957	377,827	13.21	29.50	42.71

TABLE XI.—*The rates, per 1,000 of strength, of admission, death, discharge, and non-effectiveness of the U. S. Army, and of the troops in the several departments, for the year 1890, as compared with those of the decade 1879-'88, and of certain foreign armies.*

Names of army or departments.	U. S. Army, 1890.				U. S. Army, white, 1890.				U. S. Army, colored, 1890.			
Mean strength (corrected for time).	24,234.				21,910.				2,324.			
Causes of admission to sick report.	Admission.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Enteric fever	5.24	.49	....	.76	5.48	.50	....	.80	3.01	.40	....	.36
Other specific contagious and infectious diseases, including erysipelas	175.67	.34	....	3.02	163.08	.33	....	2.96	288.30	.40	....	3.55
Malarial fevers and resulting conditions	92.92	.15	.22	2.79	96.58	.08	.25	2.89	58.52	.79	....	1.86
Typho-malarial fever	.17	.04	....	.04	.18	....	....	.04	....	.40	....	.08
Diarrhœa, including cholera-morbus	188.56	....	.11	1.41	116.43	....	.12	1.45	138.54	....	....	1.00
Dysentery	5.74	....	.19	.23	5.66	....	.17	.20	6.45	....	.40	.46
Other miasmatic diseases	.08	....	....	.001	.09	....	....	.001	....	....	....	....
Gonorrhœa and results	35.40	....	.26	1.84	34.69	....	.29	1.87	42.17	....	....	1.53
Syphilis and results	19.72	....	2.40	1.70	18.89	....	2.07	1.63	27.54	....	5.56	2.38
Other venereal diseases	20.09	....	....	1.32	18.44	....	....	1.21	35.71	....	....	2.39
Vaccina	32.44	....	....	1.08	33.59	....	....	1.12	21.51	....	....	.72
Other enthetic diseases	1.24	.04	....	.04	1.23	.04	....	.04	1.29	....	....	.05
Alcoholism	40.73	.19	.15	.45	44.45	.21	.17	.49	5.50	....	....	.06
Other dietic diseases	.78	....	.30	.05	.82	....	.29	.06	.43	....	.40	.02
Rheumatism (including muscular)	83.19	.04	2.06	4.05	76.54	.04	1.99	3.78	145.86	....	2.78	6.64
Other constitutional diseases	4.75	.30	.52	.43	4.75	.29	.50	.40	4.73	.40	.79	.69
Developmental diseases	.50	...	.71	.08	.50	....	.79	.08	.43	....	....	.03
Parasitic diseases	3.42	...	....	.09	3.[illegible]	....	....	.09	1.29	....	....	.04
Headache and neuralgia	49.89	....	.19	.92	45.32	....	.17	.90	92.94	....	.40	1.06
Other diseases of the nervous system	9.74	.79	2.32	1.21	10.00	.83	2.48	1.23	7.31	.40	.79	1.04
Diseases of the eye	16.88	....	1.46	.81	15.97	....	1.37	.78	25.39	....	2.38	1.08
Diseases of the ear	9.04	....	.82	.42	9.54	....	.91	.41	4.30	....	....	.50
Catarrhs and common colds	21.50	....	....	.22	20.31	....	....	.21	32.70	....	....	.33
Bronchitis	74.07	...	.22	1.44	74.85	...	.21	1.48	66.69	...	.40	1.02
Pneumonia	3.96	.52	....	.41	3.51	.37	....	.37	8.18	1.99	...	.75
Pulmonary phthisis	3.26	.71	1.57	.83	3.10	.66	1.66	.78	4.73	1.19	.79	1.25
Pleuritis	2.68	.07	.11	.19	2.15	.04	.08	.17	7.75	.40	.40	.35
Other diseases of the respiratory system	5.98	.19	.34	.26	5.57	.17	.37	.24	9.90	.40	....	.37
Diseases of the heart and valves	7.01	.26	1.57	.57	6.89	.21	1.49	.61	8.18	.79	2.38	.21
Other diseases of the circulatory system	1.69	.22	.52	.17	1.87	.21	.58	.18	....	.40	....	....
Tonsillitis	33.59	....	....	.48	31.67	....	....	.47	51.63	....	....	.61
Dyspepsia, colic, and consitpation	59.17	...	.30	.78	56.46	....	.25	.78	84.77	....	.79	.83
Other diseases of the digestive system	77.94	.34	1.87	2.08	75.12	.37	1.94	2.10	104.56	....	1.19	1.90
Diseases of the kidneys	1.98	.49	.19	.19	1.64	.50	.21	.17	5.16	.40	....	.37
Other diseases of the genitourinary system (non-venereal	16.13	....	1.05	.94	15.65	....	.99	.95	20.65	....	1.59	.91
Diseases of the locomotor system (excluding muscular rheumatism)	4.29	....	.71	2.07	4.20	....	.70	.42	5.16	....	.79	.41
Diseases of the integumentary system	76.21	.04	.19	.42	77.86	.04	.17	2.07	60.67	....	.40	2.06
All other diseases	25.46	.04	.30	1.08	23.83	....	.29	1.07	40.88	.40	.40	1.22
Heat stroke	3.01	....	.07	.08	3.24	....	.04	.08	.86	....	.40	.10
Frost-bite and general freezing	2.48	....	.04	.14	1.87	....	.04	.11	8.18	....	....	.39
Contusions and sprains	128.28	..	.19	3.14	125.96	....	.17	3.13	150.17	....	.40	3.26
Dislocations	2.56	...	.11	.17	2.56	....	.08	.17	2.58	....	.40	.08
Fractures (not gunshot)	6.85	.07	.64	1.14	6.80	.08	.66	1.17	7.31	....	.40	.94
Incised, lacerated, contused, and punctured wounds	56.20	.11	.07	1.63	52.26	.12	.08	1.55	93.37	....	....	2.37
Shot wounds	4.79	2.29	.75	.51	4.38	2.32	.54	.44	8.61	1.99	2.78	1.19
All other injuries	39.53	.98	.45	1.04	39.62	.99	.33	1.03	38.73	.79	1.59	1.19
Total for disease	1,140.55	5.25	20.69	34.86	1,110.59	4.88	20.48	34.51	1,422.97	8.74	22.65	38.15
Total for injuries	243.70	3.45	2.32	7.85	236.69	3.52	1.94	7.68	309.82	2.78	5.96	9.51
Total for all causes	1,384.25	8.69	23.01	42.71	1,347.28	8.40	22.43	42.19	1,732.79	11.52	28.61	47.66

TABLE XI.—*The rates, per 1,000 of strength, of admission, death, discharge, and non-effectiveness of the U. S. Army, and of the troops in the several departments, for the year 1890, as compared with those of the decade 1879–'88, and of certain foreign armies.*

Names of army or departments.	U. S. army 1879-'88.				U. S. Army, white, 1879-'88.				U. S. Army, colored, 1879-'88.			
Mean strength (corrected for time).	23, 828.				21, 542.				2, 286.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Enteric fever	4. 91	. 74	. 04	..	5. 12	. 75	. 04	....	3. 02	. 68	....	....
Other specific contagious and infectious diseases, including erysipelas	19. 72	. 18	. 03	....	18. 78	. 17	. 03	..	28. 60	. 28	. 04	....
Malarial fevers and resulting conditions	162. 03	. 25	. 18	....	162. 43	. 25	. 19	..	158. 63	. 28	. 12	....
Typho-malarial fever	2. 31	. 27	. 004	....	2. 38	. 24	. 004	..	1. 66	. 56	....	....
Diarrhœa, including cholera morbus	169. 97	. 09	. 31	....	169. 87	. 09	. 31	....	170. 83	. 08	. 36	....
Dysentery	15. 18	. 21	. 19	....	13. 65	. 20	. 19	....	29. 65	. 32	. 20	....
Other miasmatic diseases	. 03	. 04	......	..	. 03	. 04	......	....	. 04	. 04	....	....
Gonorrhea and results	40. 54	..	. 30	..	40. 03	....	. 31	..	44. 48	....	20	....
Syphilis and results	37. 48	. 03	3. 59	....	35. 61	. 03	3. 53	....	55. 07	. 04	4. 14	....
Other venereal diseases	1. 74	....	. 03	....	1. 69	....	. 03	....	2. 19	....	....	....
Vaccina	9. 34	....	......	..	9. 27	....	......	....	10. 02	....	....	....
Other enthetic diseases	2. 39	. 004	. 01	...	2. 26	. 004	. 01	....	3. 59	....	....	....
Alcoholism	56. 68	. 17	. 47	..	62. 22	. 19	. 52	....	4. 42	....	....	....
Other dietic diseases	. 49	. 01	. 04	..	. 44	. 01	. 05	....	. 96	....	....	....
Rheumatism (including muscular	110. 73	. 05	3. 01	....	107. 14	. 05	2. 97	....	144. 65	. 04	3. 42	....
Other constitutional diseases	8. 78	. 20	. 70	...	8. 64	. 19	. 65	....	10. 06	. 28	1. 19	....
Developmental diseases	....	....	......	...	....	...	......	...	....	....	....	....
Parasitic diseases	3. 34	...	. 004	...	3. 53	...	. 004	....	1. 53	..	..	....
Headache and neuralgia	93. 03	.....	. 40	....	90. 07	.....	. 41	....	120. 93	.....	. 36	....
Other diseases of the nervous system	11. 52	. 52	3. 68	....	11. 73	. 54	3. 74	...	9. 58	. 40	3. 10	....
Diseases of the eye	24. 64	.....	1. 29	....	24. 20	....	1 29	..	28. 82	.....	1. 35	....
Diseases of the ear	8. 49	. 01	. 83	..	8. 97	. 01	. 88	....	4. 02	.....	. 36	....
Catarrhs and common colds	100. 14	.....	. 03	....	97. 95	...	. 03	....	120. 75	.....	. 04	....
Bronchitis	69. 66	. 10	. 64	....	68. 49	. 11	. 67	....	80. 74	.....	. 40	....
Pneumonia	4. 75	. 86	. 16	....	4. 46	. 76	. 15	...	7. 52	1. 79	. 24	....
Pulmonary phthisis	3. 55	. 57	2. 08	....	3. 50	. 54	2. 07	...	4. 02	. 84	2. 11	....
Pleuritis	3. 89	. 03	. 12	....	3. 54	. 03	. 12	...	7. 13	. 04	. 12	....
Other diseases of the respiratory system	7. 99	. 09	. 46	....	7. 57	. 08	. 48	..	11. 98	. 16	. 32	....
Diseases of the heart and valves	3. 36	. 31	1. 58	....	3. 42	. 32	1. 64	...	2. 80	. 24	1. 03	...
Other diseases of the circulatory system	4. 90	. 36	1. 05	....	5. 11	. 36	1. 10	....	2. 93	. 36	. 52	....
Tonsillitis	55. 22	....	. 01	....	53. 52	.....	. 01	....	71. 21	.....	....	....
Dyspepsia, colic, and constipation	82. 25	.....	. 22	....	79. 06	....	. 24	...	112. 33	.....	. 08	....
Other diseases of the digestive system	48. 77	. 57	2. 21	...	48. 62	. 59	2. 26	....	50. 08	. 48	1. 75	....
Diseases of the kidneys	1. 35	. 20	. 25	....	1. 36	. 20	. 25	....	1. 27	. 20	. 32	....
Other diseases of the genito-urinary system (non-venereal)	17. 63	. 04	1. 52	..	17. 34	. 05	1. 48	....	20. 34	.....	1. 87	....
Diseases of the locomotor system (excluding muscular rheumatism)	5. 80	. 01	1. 37	....	5. 77	. 004	1. 34	...	6. 12	. 08	1. 59	....
Diseases of the integumentary system	98. 28	. 004	. 42	....	100. 97	. 004	. 43	....	72. 83	.....	. 40	....
All other diseases	7. 69	. 05	. 94	....	7. 84	. 05	. 97	....	6. 25	.....	. 68	....
Heat stroke	1. 59	. 03	. 02	..	1. 70	. 03	. 03	....	. 52	..	....	....
Frost-bite and general freezing	8. 36	. 09	. 13	....	6. 33	. 10	. 11	....	27. 46	. 04	. 36	....
Contusions and sprains	150. 23	. 03	. 64	..	150. 22	. 03	. 63	....	150. 50	. 04	. 72	....
Dislocations	2. 43	. 01	. 17	..	2. 44	. 01	. 17	....	2. 32	...	. 16	....
Fractures (not gunshot)	6. 66	. 14	. 76	....	6. 95	. 14	. 79	....	3. 94	. 12	. 44	...
Incised, lacerated, contused, and punctured wounds	43. 59	. 15	. 34	....	42. 00	. 15	. 32	..	57. 73	. 16	. 44	...
Shot wounds	5. 57	1. 54	1. 12	..	4. 89	1. 34	1. 06	....	11. 98	3. 46	1. 67	....
All other injuries	27. 33	1. 27	. 61	....	27. 81	1. 33	. 62	...	22. 74	. 72	. 60	...
Total for disease	1, 298. 56	5. 98	28. 20	...	1, 286. 59	5. 85	28. 40	....	1, 411. 10	7. 16	26. 29	...
Total for injuries	245. 67	3. 25	3. 79	...	242. 32	3. 12	3. 73	....	277. 22	4. 53	4. 38	...
Total for all causes	1, 544. 23	9. 23	31. 99	....	1, 528. 91	8. 97	32. 13	....	1, 688. 32	11. 69	30. 67	...

TABLE XI.—*The rates, per 1,000 of strength, of admission, death, discharge, and non-effectiveness, of the U. S. Army, and of the troops in the several departments, for the year 1890, as compared with those of the decade 1879-'88, and of certain foreign armies.*

Names of army or departments.	Austria-Hungary, 1889.			Belgium, 1889.			Great Britain, 1888.			Prussia, Saxony, Wurtemberg, 1887-'88.		
Mean strength (corrected for time).	281,569			46,471			101,695			417,104		
Causes for admission to sick report.	Admissions.	Deaths.	Discharges.	Admissions.	Deaths.	Discharges.	Admissions.	Deaths.	Discharges.	Admissions.	Deaths.	Discharges.
Enteric fever	4.62	.75	.03	7.38	.73	....	1.24	.33	....	4.38	.33	....
Other specific contagious and infectious diseases, including erysipelas	18.45	.06	.01	8.04	.11	....	10.98	.16	....	6.98	.15	....
Malarial fevers and resulting conditions	34.57	...	.09	.41	....	....	4.94	.01	....	4.71	....	....
Typho-malarial fever	....	....	....	....	....	....	....	....	....	....	....	....
Diarrhœa	43.08	.01	.01	.58	....	....	4.84	..	....	16.56	....	....
Dysentery	.70	.09	....	.02	....	.02	.71	.04	.07	.14	....	....
Other miasmatic diseases	.05	.04	....	....	....	....	.04	.03	....	.04	.04	....
Gonorrhœa and results	31.78	...	....	19.43	....	....	91.13	....	.03	15.73	....	....
Syphilis and results	18.58	....	.07	5.58	....	....	106.52	.11	.93	6.30	...	.04
Other venereal diseases	14.93	....	....	4.11	....	..	26.96	....	....	4.84	....	....
Vaccina	....	....	....	....	....	....	....	....	....	....	....	....
Other enthetic diseases	.17	....	....	....	.02	....	....	....	....	.27	.01	....
Alcoholism	.12		.03	.28	.02	....	3.47	.03	....	.24	.01	....
Other dietic diseases	.80	.02	....	....	....	....	.17	....	....	.13	.01	....
Rheumatism (including muscular)	28.17	....	.34	16.12	....	.17	36.95	.04	.77	33.23	.03	.37
Other constitutional diseases	10.06	.22	1.06	9.62	....	3.81	5.51	.22	.43	3.19	.06	.48
Developmental diseases	....	....	.15	....	....	....	6.68	.02	1.11	.22	.01	1.44
Parasitic diseases	5.91	....	....	.41	....	....	26.08	.01	....	8.47	....	....
Headache and neuralgia Other diseases of the nervous system	7.36	.50	1.68	9.88	.23	1.66	9.17	.49	2.12	5.01	.17	2.71
Diseases of the eye	50.32	...	5.25	28.58	....	.75	12.03	....	.59	28.62	....	3.74
Diseases of the ear	15.32	....	4.02	9.79	....	1.16	6.08	.01	.58	11.46	.01	1.42
Bronchitis	116.60	....	1.00	26.36	.13	1.36	47.20	.07	2.62	50.39	.01	5.88
Pneumonia	8.85	.57	.03	3.01	.17	.02	9.76	.85		11.63	.48	
Pulmonary phthisis	3.76	1.18	2.46	1.53	1.08	.26	4.20	1.09		2.35	.48	
Pleuritis	4.91	.22	.29	4.20	.13	.11	3.77	.06		4.67	.12	
Other diseases of the respiratory system (including catarrh and common colds)	5.16	.10	.33	6.74	...	.39	2.08	.09		23.37	.03	
Diseases of the heart and valves	9.10	.17	2.66	5.75	.19	1.36	8.70	.30	3.12	1.84	.08	3.24
Other diseases of the circulatory system				.77	...	.37	1.42	.11		1.26	....	
Tonsillitis, other diseases of the mouth and throat	53.36	....	.13	19.73	....	....	58.15	....	.94	78.17	....	5.49
Other diseases of the digestive system	90.30	.27	6.59	45.02	.13	2.35	30.77	.34		50.00	.15	
Diseases of the kidneys	.36	.10	.05	.22	.09	....	.50	.16	.60	.50	.11	.64
Other diseases of the genito-urinary system (non-venereal)	15.79	.02	1.07	6.28	....	.62	20.05	.03		5.99	.01	
Diseases of the locomotor system (excluding muscular rheumatism)	25.19	.09	4.89	7.40	.02	.99	7.28	.08	.87	25.95	.06	5.30
Diseases of the integumentary system	182.71	....	.90	46.82	.04	.65	71.70	.03	.28	205.40	.02	.40
All other diseases	32.55	....	8.73	16.76	.86	.45	27.39	.01	.12	24.22	....	.32
Heat stroke	.12	....	....	.28	....	....	....	....	....	.21	.01	
Frostbite and general freezing	3.85	.01	.09	1.48	....	....	94.42	.80	.73	8.37	....	
Contusions and sprains	....	....	....	17.99	....	....				94.08	.02	
Dislocations	.73	...	.29	.49	....	.04				1.06	....	
Fractures (not gunshot)	2.10	.01	.95	1.92	....	.02				2.82	.02	
Incised, lacerated, contused, and punctured wounds	....	....	....	26.88	....	....				26.21	.01	
Shot wounds	1.26	1.24	.22	.09	.13	....				.58	.26	
All other injuries	109.61	.63	1.32	9.46	.30	.47				34.18	.53	
Total for disease	833.62	4.41	41.87	310.77	3.96	16.48	646.47	4.72	15.18	635.72	2.38	31.47
Total for injuries	117.67	1.89	2.86	58.58	.43	.54	94.42	.80	.73	168.41	.86	.73
Total for all causes	951.29	6.30	44.73	369.35	4.39	17.02	740.89	5.52	15.91	804.13	3.24	32.20

Austria-Hungary.—The discharge rate is no doubt somewhat too high. The medical report states the number of discharges to have been 12,594, and referring this number to a total, consisting of the standing army, of the reserves, of the landwehr, etc., in all over 900,000 men, gives the rate as 13.5. But as 8,165 men, serving one year or less, were discharged from the standing army, and as many discharges from the same source must necessarily have taken place among men of longer service, it would seem that comparatively few discharges occurred among men outside of those serving with their colors, and that it would be more correct for the sake of comparison with our Army to refer all the discharges to a mean strength of 281,569, equivalent to that of the Austrian standing army for 1889.

Seven thousand nine hundred and thirty-two patients=28.4 per 1,000 of mean strength, were furloughed to their homes for recuperation from disease.

Belgium.—The total admission rate was 1330.6, of which 961.2 were treated in quarters and 369.4 in hospital. As the diseases of patients of the former category are not given in detail, but are only roughly stated as fevers, conjunctivites, diseases of the eye, venereal diseases, and scabies, the Belgian statement of admissions is limited to the cases treated in hospital.

One thousand six hundred and seventy-nine patients=36.1 per 1,000 of mean strength, were sent to their homes to await recovery. About one-third of the discharges occurred among men serving one year or less.

Prussia, Saxony, Würtemberg.—About one-half of the discharges made were among men serving less than one year and for disabilities contracted before conscription.

TABLE XI.—*The rates, per* 1,000 *of strength, of admission, death, discharge, and non-effectiveness of the U. S. Army, and of the troops in the several departments, for the year* 1890, *as compared with those of the decade* 1879-'88, *and of certain foreign armies.*

Names of army or departments.	Department of the East.				Department of the Platte.				Department of Dakota.			
Mean strength (corrected for time).	5,527.				3,052.				4,132.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Enteric fever	2.80	.54	....	.38	7.21	1.31	....	.93	3.87	....	....	.54
Other specific contagious and infectious diseases, including erysipelas	162.65	.54	....	3.38	143.51	...	....	1.87	194.11	.24	....	3.25
Malarial fevers and resulting conditions	87.02	...	.36	2.73	38.99	...	....	.78	20.81	....	....	.48
Typho-malarial fever	.54	....	....	.10	....	....	....	....	....	....	....	....
Diarrhœa, including cholera morbus	157.94	...	....	1.92	112.72	...	....	1.04	73.83	....	....	.67
Dysentery	5.43	...	....	.18	5.90	...	....	.21	8.71	....	.24	.15
Other miasmatic diseases	....	....	....	....	....	....	....	....	....	....	....	....
Gonorrhœa and results	54.82	...	.54	2.80	23.92	...	....	.96	19.12	....	.24	.94
Syphilis and results	26.59	...	4.70	2.05	14.09	...	.66	.95	6.29	....	.73	.46
Other venereal diseases	25.87	...	...	1.64	7.86	...	....	.48	14.04	....	....	.81
Vaccina	80.15	...	....	3.13	5.57	...	....	.21	30.49	....	....	.79
Other enthetic diseases	.72	.18	....	.01	.98	...	....	.03	.97	....	....	.08
Alcoholism	57.36	.36	.36	.69	49.80	...	....	.58	22.75	.48	....	.20
Other dietic diseases	.54	...	....	.03	.33	...	....	.06	.24	....	....	.04
Rheumatism (including muscular)	73.99	....	1.09	2.71	99.93	.33	1.31	4.14	76.96	....	1.94	3.33
Other constitutional diseases	5.25	.18	.72	.43	4.26	...	.66	.58	3.63	.97	.24	.26
Developmental diseases	.18	...	.18	.03	1.31	...	1.64	.04	.24	....	.73	.02
Parasitic diseases	6.83	...	....	.16	2.29	...	....	.11	1.94	....	....	.05
Headache and neuralgia	53.56	...	.36	.80	48.17	...	....	.99	44.05	....	....	.60
Other diseases of the nervous system	9.93	1.09	.90	.98	8.19	.33	..	.34	7.50	.48	.73	1.15
Diseases of the eye	15.74	...	.54	.71	16.71	..	1.31	.70	15.49	....	.97	.63
Diseases of the ear	9.93	...	.54	.48	9.17	...	.66	.40	10.41	....	.97	.31
Catarrhs and common colds	9.77	...	....	.10	20.66	...	....	.24	22.51	....	...	.27
Bronchitis	96.80	..	....	1.93	72.74	..	....	1.49	62.20	....	.73	1.12
Pneumonia	3.08	.36	....	.50	7.86	.98	....	.76	4.84	.73	....	.31
Pulmonary phthisis	3.44	.36	2.17	.70	4.91	.98	1.97	.87	1.94	.24	.73	.27
Pleuritis	2.71	...	.18	.28	3.60	.33	.33	.22	1.69	....	....	.11
Other diseases of the respiratory system	7.42	.18	.54	.27	3.93	...	....	.15	4.11	.24	.48	.16
Diseases of the heart and valves	9.23	...	2.89	.73	5.90	...	.98	.48	7.26	.48	.73	.83
Other diseases of the circulatory system	1.63	.36	.72	.11	.98	.33	....	.05	1.94	....	....	.22
Tonsillitis	43.96	....	....	.61	37.03	...	....	.61	34.85	....	....	.49
Dyspepsia, colic, and constipation	66.04	....	.36	.65	54.39	...	.33	.72	41.14	....	.24	.49
Other diseases of the digestive system	81.06	.18	1.63	2.15	88.14	.98	.33	1.91	71.88	....	2.90	1.75
Diseases of the kidneys	1.81	.54	....	.17	1.31	.66	....	.06	1.45	....	.24	.11
Other diseases of the genito-urinary system (non-venereal)	20.26	....	1.45	.84	9.83	...	.66	.35	13.31	....	.97	1.12
Diseases of the locomotor system (excluding muscular rheumatism)	3.98	....	.54	.83	6.55	....	....	.52	3.63	....	.48	.40
Diseases of the integumentary system	83.41	....	....	2.34	61.60	....	....	1.60	50.10	....	....	1.69
All other diseases	28.59	....	.36	1.42	25.88	....	.83	.66	22.27	....	....	1.06
Heat stroke	3.08	....	....	.06	.98	....	....	.05	2.66	....	....	.10
Frostbite and general freezing.												
Contusions and sprains	.54	....	....	.01	5.57	....	....	.19	7.74	....	.24	.51
Dislocations	115.07	....	.18	2.80	119.93	....	....	2.83	107.93	....	.24	2.46
Fractures (not gunshot)	1.63	...	.54	.03	1.97	....	....	.12	2.90	....	....	.21
Incised, lacerated, contused,	6.87	....	.72	1.08	7.54	....	....	.76	4.84	....	.73	1.35
and punctured wounds	49.57	....	.18	1.42	64.88	....	....	2.12	56.15	....	....	1.30
Shot wounds	1.27	.54	.54	.15	2.62	.98	2.29	.86	12.83	8.71	.73	.61
All other injuries	38.53	.73	.18	.76	40.96	.98	.98	.95	38.96	.73	.48	.92
Total for disease	1,300.70	4.88	21.17	38.46	1,006.23	6.22	11.14	26.09	900.05	3.87	14.28	25.16
Total for injuries	216.58	1.27	2.35	6.32	244.43	1.97	3.28	7.87	234.02	9.44	2.42	7.47
Total for all causes	1,517.28	6.15	23.52	44.78	1,250.66	8.19	14.42	33.96	1,134.08	13.31	16.70	32.63

TABLE XI.—*The rates, per* 1,000 *of strength, of admission, death, discharge, and non-effectiveness of the U. S. Army, and of the troops in the several departments, for the year* 1890, *as compared with those of the decade* 1879-'88, *and of certain foreign armies.*

Names of army or departments.	Department of the Missouri.				Department of Texas.				Department of California.			
Mean strength (corrected for time).	3,776.				2,095.				1,157.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Enteric fever	7.41	1.32	.....	1.41	14.32	....	.....	1.73	2.59	....	.....	.31
Other specific, contagious, and infectious diseases, including erysipelas	136.12	.26	.....	2.83	131.74	.48	.....	2.12	179.77	.86	.....	3.14
Malarial fevers and resulting conditions	182.73	.26	.53	4.42	244.39	.48	.48	9.84	69.14	....	.....	1.27
Typho-malarial fever	....	..	.....	.....	....	....	....	.....	....	....	.....	....
Diarrhœa, including cholera morbus	111.74	...	.26	1.69	191.40	....	.....	2.36	57.91	....	.....	.74
Dysentery	3.18	...	.26	.19	9.55	....	.95	.30	....	....	.....	....
Other miasmatic diseases	....	...	..	.....	....	....	.....	.....	....	....	.....	....
Gonorrhœa and results	29.39	....	.26	1.80	56.80	....	.95	3.09	36.30	..	....	1.97
Syphilis and results	21.45	....	3.71	1.66	29.12	....	1.43	2.88	15.56	..	2.59	1.87
Other venereal diseases	23.57	....	....	1.72	82.46	...	.....	2.22	23.33	...	.....	1.29
Vaccina	36.81	....	.....	.90	9.55	....	.....	.21	15.56	...	.....	.36
Other enthetic diseases	1.59	....	.....	.03	2.86	...	.....	.14	.. .	....	.....	....
Alcoholism	22.25	....	.....	.31	51.07	.48	.48	.53	30.25	....	.....	.23
Other dietic diseases	1.06	....	.53	.06	.48	...	.....	.01	.86	....	.86	.02
Rheumatism (including muscular)	64.35	....	2.38	2.46	79.23	....	.95	2.29	73.46	....	3.46	3.01
Other constitutional diseases	3.44	....	....	.10	4.77	....	1.43	.46	6.05	..	.86	.64
Developmental diseases	.26	....	1.32	.01	....	....	.95	... .	1.73	..	1.73	.44
Parasitic diseases	3.18	....	.....	.07	4.30	....	.....	.11	.86	....	.....	.01
Headache and neuralgia	36.55	....	.....	.61	85.92	....	.....	.91	22.47	....	.....	.58
Other diseases of the nervous system	10.33	.79	1.85	1.18	10.50	.48	1.43	.79	8.64	...	1.73	1.45
Diseases of the eye	14.30	....	.79	.84	15.75	....	2.86	.79	12.96	....	3.46	.91
Diseases of the ear	6.36	....	.79	.26	10.50	....	.95	.54	3.46	....	1.73	.20
Catarrahs and common colds	25.69	....	.....	.24	37.71	...	.....	.34	28.52	....	.....	.37
Bronchitis	58.52	....	.26	1.27	39.62	....	.48	.89	87.29	....	.....	1.70
Pneumonia	3.44	.53	.....	.31	.95	....	.....	.08	3.46	....	.....	.49
Pulmonary phthisis	1.85	.79	1.06	.32	5.73	.95	4.30	1.41	3.46	.86	.86	.86
Pleuritis	2.38	.26	.26	.06	1.43	....	.....	.24	4.32	....	.....	.18
Other diseases of the respiratory system	8.21	.53	.53	.45	2.39	....	.48	.20	3.46	....	.....	.64
Diseases of the heart and valves	5.03	....	1.59	.35	4.30	....	.48	.26	3.46	....	1.73	.32
Other diseases of the circulatory system	2.65	.26	.79	.25	1.91	....	1.43	.14	1.73	....	.86	.16
Tonsillitis	24.63	....	.....	.35	15.75	....	.. ..	.18	20.74	....	.....	.35
Dyspepsia, colic, and constipation	53.26	....	.26	.81	63.69	....	.....	.81	31.98	....	.....	.31
Other diseases of the digestive system	72.30	.79	3.18	2.40	62.53	.48	2.39	1.68	70.01	....	2.59	1.72
Diseases of the kidneys	1.32	.79	.....	.04	3.34	.95	.95	.32	2.59	....	.....	.03
Other diseases of the genetourinary system (non-venereal)	16.68	....	2.12	1.17	21.48	....	.....	.91	19.01	....	1.73	1.03
Diseases of the locomotor system (excluding muscular rheumatism)	5.03	....	1.32	.51	3.82	....	.48	.30	2.59	....	1.73	.05
Diseases of the integumentary system	110.70	....	.26	2.44	92.12	.48	.....	2.60	95.94	....	.86	1.65
All other diseases	11.39	....	.53	.63	52.98	...	.95	1.73	12.96	....	.....	.61
Heat stroke	1.59	....	.....	.02	10.98	....	.....	.32	....	....	.....	....
Frostbite and general freezing	.53	....	.....	.05	....	....	.....	.....	....	....	.....	.. ..
Contusions and sprains	142.74	....	.26	4.33	122.67	....	.....	2.89	146.93	....	.86	4.32
Dislocations	4.50	....	.....	.34	2.39	....	.....	.09	2.59	....	.. ..	.35
Fractures (not gunshot)	7.41	....	.....	1.35	7.64	....	.48	1.29	4.32	....	2.59	1.15
Incised, lacerated, contused, and punctured wounds	54.56	.79	.26	1.56	51.07	....	.....	1.58	45.81	....	.....	1.26
Shot wounds	4.77	2.65	.53	.45	1.91	.48	.....	.27	3.46	....	.....	.14
All other injuries	41.05	1.59	.53	1.08	34.37	1.43	.95	.98	45.81	.86	.....	1.01
Total for disease	1,124.21	6.62	24.89	34.15	1,394.75	4.77	24.82	43.43	952.46	1.73	26.79	28.32
Total for injuries	257.15	5.03	1.59	9.19	231.03	1.91	1.43	7.32	248.92	.86	3.46	8.22
Total for all causes	1,381.36	11.65	26.48	43.33	1,625.78	6.68	26.25	50.75	1,201.38	2.59	30.25	36.54

TABLE XI.—*The rates, per 1,000 of strength, of admission, death, discharge, and noneffectiveness of the U. S. Army, and of the troops in the several departments, for the year 1890, as compared with those of the decade 1879–'88, and of certain foreign armies.*

Names of army or departments.	Department of the Columbia.				Department of Arizona.			
Mean strength (corrected for time).	1,464.				2,984.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Enteric fever	4.78	......	......	.86	1.68	......	......	.23
Other specific contagious and infectious diseases, including erysipelas	143.43	......	......	3.15	299.60	.34	......	3.96
Malarial fevers and resulting conditions	56.01	......	......	1.90	67.69	.67	.34	2.13
Typho-malarial fever	......	......	......	......	.34	.34	......	.16
Diarrhœa, including cholera morbus	83.33	......	......	.85	114.27	......	.34	1.15
Dysentery	......	......	......	......	7.71	......	......	.46
Other miasmatic diseases	......	......	......	......	.67	......	......	.01
Gonorrhœa and results	25.96	......	......	1.56	31.17	......	......	1.49
Syphilis and results	29.37	......	2.73	3.01	19.44	......	2.68	1.60
Other venereal diseases	8.20	......	......	.35	22.12	......	......	1.71
Vaccina	8.20	......	......	.18	3.69	......	......	.06
Other enthetic diseases	.68	......	......	.01	2.01	......	......	.04
Alcoholism	61.48	......	......	.72	36.19	......	.34	.31
Other dietic diseases	1.37	......	.68	.21	2.01	......	1.34	.09
Rheumatism, (including muscular)	90.85	......	......	2.65	117.63	......	1.68	4.59
Other constitutional diseases	4.78	......	.68	.36	7.04	1.01	.34	.76
Developmental diseases	......	......	......	......	1.01	......	.34	.32
Parasitic diseases	2.73	......	......	.05	2.35	......	......	.05
Headache and neuralgia	35.52	......	......	.51	62.67	......	.67	1.28
Other diseases of the nervous system	11.61	.68	1.37	.65	11.39	.34	1.68	1.85
Diseases of the eye	25.27	......	2.05	1.13	22.79	......	3.85	.99
Diseases of the ear	16.39	......	2.73	.90	6.37	......	.67	.41
Catarrhs and common colds	12.30	......	......	.12	28.15	......	......	.27
Bronchitis	162.57	......	.68	2.60	45.91	......	......	.83
Pneumonia	5.46	1.37	......	.47	2.68	.34	......	.30
Pulmonary phthisis	2.05	1.37	......	.41	3.35	.34	1.68	1.98
Pleuritis	2.73	......	......	.16	3.69	......	......	.12
Other diseases of the respiratory system	6.83	......	......	.15	8.38	.34	.34	.41
Diseases of the heart and valves	11.61	......	.68	.36	7.37	.67	3.85	.69
Other diseases of the circulatory system	......	......	......	......	1.34	.34	1.01	.28
Tonsillitis	26.64	......	......	.43	41.89	......	......	.50
Dyspepsia, colic, and constipation	58.74	......	.68	1.08	85.79	......	.34	1.30
Other diseases of the digestive system	91.53	.68	2.05	2.47	85.79	......	1.68	2.26
Diseases of the kidneys	1.37	......	.68	.51	3.69	.67	.34	.40
Other diseases of the genito-urinary system (non-venereal)	12.98	......	.68	.95	15.08	......	1.01	1.21
Diseases of the locomotor system excluding muscular rheumatism)	2.73		1.37	.29	4.02	......	1.34	.21
Diseases of the integumentary system	55.33	......	.68	2.05	63.00	......	.67	1.77
All other diseases	10.25	....	......	.41	34.52	.34	.34	1.33
Heat stroke	4.78	......	......	.07	2.01	......	.67	.10
Frostbite and general freezing	2.05	......	......	.07	1.01	......	......	.11
Contusions and sprains	147.53	......	......	2.86	160.52	......	.34	3.31
Dislocations	4.10	......	......	.46	1.34	......	......	.02
Fractures (not gunshot)	6.15	......	2.05	1.11	9.05	.67	1.01	1.10
Incised, lacerated, contused, and punctured wounds	56.69	......	......	2.13	70.04	......	......	1.99
Shot wounds	.68	2.05	.68	.002	7.04	1.68	1.34	1.35
All other injuries	36.20	1.37	......	1.68	42.23	1.34	.34	1.83
Total for disease	1,073.08	4.10	17.76	31.80	1,274.46	5.70	25.80	37.59
Total for injuries	258.20	3.41	2.73	8.38	293.23	3.69	3.69	9.30
Total for all causes	1,331.28	7.51	20.49	40.18	1,567.69	9.38	29.49	46.89

TABLE XII.—*Specific febrile and acute infectious diseases in various armies.*

[Admission rates per 1,000 of strength.]

Diseases.	United States.			Austria-Hungary, 1889.	Belgium, 1889.	Great Britain. 1888.	Prussia, Saxony, Würtemberg. 1887-1886.
	1890.	1889.	1879-1888.				
Cerebro-spinal fever	.04	...	.09	.02	.10	.01	...
Chicken pox	...	.04	.16	...	.04	.08	.01
Cholera	...	...	...	...	...	...	.01
Diphtheria	.21	.16	.42	.09	.02	.12	1.07
Enteric fever	5.24	5.32	4.91	4.62	7.38	1.24	4.38
Measles	2.48	3.76	3.43	.49	.41	1.73	.95
Mumps	.87	8.32	3.32	2.00	.45	1.04	(*)
Scarlet fever	.25	.08	.18	.26	.20	2.38	.86
Smallpox	.04	.16	.15	.35	.15	.14	...
Varioloid	...	.08	.13	...		2.58	...
Typhus fever	...	...	.03	.02	...	...	.01
Whooping cough	.21	.04	.07	...	...	.01	.16
Yellow fever	...	...	.20	...	...	...	...

* Mumps are enumerated under the digestive system.

TABLE XIII.—*Distribution of specific febrile diseases, etc., at United States military posts during the year* 1890.

Posts.	Specific febrile and acute infectious diseases, excluding influenza, quinsy, and erysipelas.												Influenza.	Quinsy.	Erysipelas.	Aggregate.	Ratios per 1,000 of mean strength.
	Cerebro-spinal fever.	Dengue.	Diphtheria.	Enteric fever.	Measles.	Mumps.	Scarlet fever.	Smallpox.	Whooping cough.	Other infectious diseases.	Total.	Ratios per 1,000 of mean strength.					
Fort Sam Houston, Tex	...	...	...	29	...	1	...	...	...	...	30	49.50	104	...	...	134	221.12
Columbus Barracks, Ohio	...	...	...	...	21	...	1	...	...	...	22	43.82	29	...	...	51	101.59
Fort Leavenworth, Kans	...	...	...	8	4	1	...	...	...	...	13	22.18	67	...	5	85	145.03
Fort Elliott, Tex	...	...	...	12	...	...	...	...	...	...	12	98.36	55	...	1	68	557.38
Fort Yates, N. Dak	...	...	...	5	...	...	...	...	4	...	9	31.36	142	...	...	151	526.13
Fort Niobrara, Nebr	...	...	...	5	3	...	...	...	...	...	8	21.16	67	...	1	76	201.06
Fort Walla Walla, Wash	...	...	...	6	...	1	...	...	...	...	7	22.01	43	...	...	50	157.23
Fort Barrancas, Fla	...	...	...	...	6	...	...	...	...	...	6	69.77	...	...	...	6	69.77
Fort Buford, N. Dak	...	...	...	1	5	...	...	...	...	...	6	23.17	57	...	...	63	243.24
Fort Custer, Mont	...	...	...	6	...	...	...	...	...	...	6	18.13	129	...	1	136	410.86
Fort McIntosh, Tex	...	6	...	...	...	...	...	...	...	...	6	46.15	1	...	1	8	61.54
Fort Robinson, Nebr	...	...	...	5	...	1	...	...	...	...	6	15.27	120	...	2	128	325.70
Fort Douglas, Utah	...	...	...	5	...	...	...	...	...	...	5	11.82	42	...	1	48	113.48
Fort Logan, Colo	...	...	...	1	3	...	1	...	...	...	5	17.99	14	...	6	25	89.93
Fort Sherman, Idaho	...	...	...	1	4	...	...	...	...	...	5	18.88	93	1	2	101	371.32
Whipple Barracks, Ariz.	...	...	...	5	...	...	...	...	...	...	5	20.75	36	...	...	41	170.12
Fort Monroe, Va	...	...	...	3	...	...	...	...	...	1	4	9.24	108	...	2	114	263.28
Fort Reno, Okla	...	...	...	4	...	...	...	...	...	...	4	13.51	...	...	...	4	13.51
Fort Myer, Va	...	...	...	1	...	2	...	...	...	...	3	21.90	23	...	...	26	189.78
Fort D. A. Russell, Wyo	...	...	...	3	...	...	...	...	...	...	3	8.62	16	...	...	19	54.60
Vancouver Barracks, Wash	...	...	...	...	2	1	...	...	...	...	3	7.14	...	...	2	5	11.90
Field Department of Dakota	...	...	...	1	1	1	...	...	...	...	3	3.91	1	...	...	4	5.22
Fort Assinniboine, Mont	...	...	...	2	...	...	...	...	...	...	2	4.58	97	...	...	99	226.54
Fort Canby, Wash	...	...	...	...	1	...	...	...	1	...	2	31.75	3	...	...	5	79.37
Fort Hamilton, N. Y	...	...	...	...	...	2	...	...	...	...	2	10.10	38	...	...	40	202.02
Fort Keogh, Mont	...	...	...	...	...	...	2	...	...	...	2	5.76	1	...	3	6	17.29
Fort Marcy, N. Mex	...	...	...	...	1	...	...	1	...	...	2	18.18	6	...	1	9	81.82
Fort McPherson, Ga	...	...	...	1	...	...	...	...	...	1	2	10.64	37	...	...	39	207.42
Mt. Vernon Barracks, Ala	...	...	...	2	...	...	...	...	...	...	2	18.02	19	...	3	24	216.25
Fort Niagara, N. Y	...	...	...	1	1	...	...	...	...	...	2	17.54	23	...	...	25	219.30
Camp Pilot Butte, Wyo	...	...	...	2	...	...	...	...	...	...	2	25.64	13	...	1	16	205.13
Fort Porter, N. Y	...	...	2	...	...	...	...	...	...	...	2	21.05	14	...	...	16	168.42
Presidio of San Francisco, Cal	...	...	...	2	...	...	...	...	...	...	2	4.40	83	...	1	86	189.01
Fort Sidney, Nebr	...	...	...	2	...	...	...	...	...	...	2	9.80	...	...	3	5	24.51
Fort Snelling, Minn	...	...	...	...	...	2	...	...	...	...	2	6.90	24	...	...	26	89.66
Fort Stanton, N. Mex	...	...	...	...	2	...	...	...	...	...	2	15.04	47	...	...	49	368.42
Fort Trumbull, Conn	...	...	2	...	...	...	...	...	...	...	2	38.46	18	...	...	20	384.62
Watervliet Arsenal, N. Y	...	...	...	2	...	...	...	...	...	...	2	33.33	4	...	...	6	100.00

TABLE XIII.—*Distribution of specific febrile diseases, etc., at United States mil*
during the year 1890.—Continued.

Posts.	Specific febrile and acute infectious diseases, excluding influenza, quinsy, and erysipelas.												Influenza.	Quinsy.	Erysipelas.
	Cerebro-spinal fever.	Dengue.	Diptheria.	Enteric fever.	Measles.	Mumps.	Scarlet fever.	Smallpox.	Whooping cough.	Other infectious diseases.	Total.	Ratios per 1,000 of mean strength.			
Fort Adams, R. I						1					1	5.08	22		
Chicago Headquarters, Ill				1							1	17.24	3		
Fort Columbus, N. Y. H				1							1	6.10	12		1
Davids Island, N. Y. H					1						1	2.30	44		2
Camp Del Rio, Tex				1							1	76.92	1		
Frankford Arsenal, Pa			1								1	26.32	15		
Fort Grant, Ariz						1					1	3.06	213		
Camp Guthrie, Okla				1							1	23.26	1		
Hot Springs, Ark					1						1	21.28	1		
Jackson Barracks, La						1					1	10.87	15		
Jefferson Barracks, Mo				1							1	2.46			1
Kennebec Arsenal, Me				1							1	66.67	10		
Fort Lewis, Colo						1					1	5.05	40		1
Fort Abraham Lincoln, N. Dak	1										1	10.53	36		
Madison Barracks, N. Y				1							1	4.03	29		
Fort Maginnis, Mont							1				1	13.16	46		1
Fort McHenry, Md							1				1	10.10	24		
Fort McKinney, Wyo						1					1	6.85			
Fort Meade, S. Dak				1							1	3.25	19		1
Camp Pena Colorado, Tex						1					1	18.52	3		
Fort Pierre, S. Dak						1					1	29.41	6		
Plattsburg Barracks, N. Y					1						1	21.28	12		
San Carlos, Ariz					1						1	4.00	75		
St. Francis Barracks, Fla		1									1	15.38			
Fort Suly, S. Dak						1					1	8.93			
Fort Warren, Mass				1							1	11.63	5		
Washington Barracks, D. C					1						1	3.92	3		
Fort Wayne, Mich					1						1	4.74	40		
Willets Point, N. Y				1							1	2.50	44		1
Field Department of the East				1							1	28.57			
Field Department of the Missouri						1					1	20.41			
Field Department of California				1							1	8.40			1
Fort Wingate, N. Mex													145		1
West Point, N. Y													139		
Fort Clark, Tex													112		
Fort Sill, Okla													91		1
Fort Apache, Ariz													85		
Fort Riley, Kans													70		
Fort Washakie, Wyo													70		
Fort Huachuca, Ariz													58		4
Camp Poplar River, Mont													51		2
Fort Missoula, Mont													52		
Fort Randall, S. Dak													51		1
Fort Spokane, Wash													49		
Fort Mackinac, Mich													44		
Fort Omaha, Nebr													41		
Fort Bidwell, Cal													40		
Fort Thomas, Ariz													39		
Fort Lowell, Ariz													34		
Fort Supply, Ind. T													32		
Fort Bayard, N. Mex													31		
Fort Bowie, Ariz													30		
Leavenworth Prison Guard, Kans													29		
Fort Laramie, Wyo													28		
Angel Island, Cal													27		
Fort Du Chesne, Utah													25		1
Little Rock Barracks, Ark													25		
Rock Island Arsenal, Ill		—											23		
Fort Verde, Ariz													22		
Fort Crawford, Cal													20		1
Fort McDowell, Ariz													21		

* Fort Laramie. This rate (2,000) is excessive. Post was abandoned in March, the avera becoming only 14 for the year, while it was 77 during the prevalence of the disease, Ja The rate to actual strength is 363.63.

TABLE XIII.—*Distribution of specific febrile diseases, etc., at United States military posts during the year* 1890—Continued.

Posts.	Specific febrile and acute infectious diseases, excluding influenza, quinsy, and erysipelas.												Influenza.	Quinsy.	Erysipelas.	Aggregate.	Ratio per 1,000 of mean strength.
	Cerebro-spinal fever.	Dengue.	Diptheria.	Enteric fever.	Measles.	Mumps.	Scarlet fever.	Smallpox.	Whooping cough.	Other infectious diseases.	Total.	Ratios per 1,000 of mean strength.					
Benicia Barracks, Cal	....	....	....	....	....	....	....	....	....	....	....	......	18	....	....	18	236.84
Alcatraz Island, Cal	....	....	....	....	....	....	....	....	....	....	....	......	17	....	....	17	184.78
Fort Bliss, Tex	....	....	....	....	....	....	....	....	....	....	....	......	17	....	....	17	138.21
Fort Shaw, Mont	....	....	....	....	....	....	....	....	....	....	....	......	16	....	....	16	100.63
Fort Mojave, Ariz	....	....	....	....	....	....	....	....	....	....	....	......	14	....	..	14	500.00
Camp Sheridan, Wyo	....	....	....	....	....	....	....	....	....	....	....	......	14	....	....	14	215.38
Fort Totten, N. Dak	....	....	....	....	....	....	....	....	....	....	....	......	14	....	....	14	215.38
Fort Wadsworth, N. Y	....	....	....	....	....	....	....	....	....	....	..	......	14	....	...	14	128.13
Fort Ringgold, Tex	....	....	....	....	....	....	....	....	....	....	....	......	13	...	....	13	109.24
Fort Bennett, S. Dak	....	....	....	....	....	....	....	....	....	....	....	......	11	....	1	12	206.90
Indianapolis Arsenal, Ind	....	....	....	....	....	....	....	....	....	....	....	......	12	....	....	12	480.00
Fort Mason, Cal	....	....	....	....	....	....	....	....	....	....	....	......	11	....	1	12	187.50
Fort Union, N. Mex	....	....	....	....	....	....	....	....	....	....	..	......	7	5	....	12	84.51
Fort Brady, Mich	....	....	....	....	....	....	....	....	....	....	....	......	11	....	..	11	115.79
Fort Hancock, Tex	....	....	....	....	....	....	....	....	....	....	....	......	11	...	....	11	224.49
Fort Ontario, N. Y	....	....	....	....	....	....	....	....	....	....	....	......	11	...	....	11	255.81
Benicia Arsenal, Cal	....	....	....	....	....	....	....	....	....	....	....	......	9	....	...	9	173.08
San Diego Barracks, Cal	....	....	....	....	....	....	....	....	....	....	....	......	9	....	....	9	147.54
Fort Sheridan, Ill	....	....	....	....	....	....	....	....	....	....	....	......	9	....	....	9	89.11
Camp Oklahoma, Okla	....	....	....	....	....	....	....	....	....	....	....	......	8	..	....	8	102.56
Fort Pembina, N. Dak	....	....	....	....	....	....	....	....	....	....	....	......	6	....	....	6	80.00
Augusta Arsenal, Ga	....	....	....	....	....	....	....	....	....	....	....	......	5	....	....	5	192.31
Fort Preble, Me	....	....	....	....	....	....	....	....	....	....	....	......	5	...	....	5	92.59
Fort Selden, N. Mex	....	....	....	....	....	....	....	....	....	....	....	......	5	....	....	5	294.12
Watertown Arsenal, Mass	....	....	....	....	....	....	....	....	....	....	....	......	5	....	....	5	151.52
Fort Wood, N. Y	....	....	....	....	....	....	....	....	....	....	....	......	4	....	....	4	86.96
Fort Klamath, Oregon	....	....	....	....	....	....	....	....	....	....	....	......	3	...	....	3	600.00
Camp Langtry, Tex	....	....	....	....	....	....	....	....	....	....	....	......	3	....	....	3	230.77
Fort Townsend, Wash	....	....	....	....	....	....	....	....	....	....	....	......	3	....	....	3	51.72
Fort Bridger, Wyo	....	....	....	....	....	....	....	....	....	....	...	......	2	...	....	2	14.08
San Antonio Headquarters, Tex	....	....	....	....	....	....	....	....	....	....	....	......	2	....	....	2	62.50
Springfield National Armory, Mass	....	....	....	....	....	....	....	....	....	....	....	......	2	....	....	2	71.43
Boisé Barracks, Idaho	....	....	....	....	....	....	....	....	....	....	...	......	......	....	1	1	9.52
Newport Barracks, Ky	....	....	....	....	....	....	....	....	....	....	....	......	1	....	....	1	16.13
Sandy Hook, N. J	....	....	....	....	....	....	....	....	....	....	....	......	1	....	....	1	31.25
Total	1	7	5	127	60	21	6	1	5	2	235	......	4,070	6	59	4,370	

TABLE XIV.—*Showing the distribution of pneumonia at United States military posts during the year 1890.*

[Cases of pneumonia, complications of other diseases not included.]

Names of posts.	Admissions.			Dispositions.			Right lung.						Left lung.				Both lungs.						
	Total.	White.	Colored.	Duty.	Died.	Otherwise.	Upper lobe.	Middle lobe.	Lower lobe.	Middle and lower lobes.	Entire.	Total.	Upper lobe.	Lower lobe.	Entire.	Total.	Lower lobes.	Entire.	Upper and lower right and lower left.	Lower left and upper right.	Both upper.	Total.	Lung not given.
Fort Robinson, Nebr	12	8	9	9	3	...	...	...	7	...	...	7	...	4	...	4	1	...	...	...	...	1	...
Columbus Barracks, Ohio	6	6	...	3	1	1	2	...	...	...	...	2	...	2	...	2	...	2	...	...	...	2	...
Fort Douglas, Utah	5	5	...	4	...	1	...	...	1	...	...	1	...	2	2	4	...	...	...	...	...	...	...
Fort Leavenworth, Kans	5	4	1	2	1	2	...	...	2	...	...	2	...	3	...	3	...	...	...	...	...	...	...
Fort Abraham Lincoln, S. Dak	3	3	...	2	...	1	...	...	2	...	...	2	...	1	...	1	...	...	...	...	...	...	...
Dakota, Field	3	3	...	...	...	3	...	...	2	...	...	2	...	...	...	...	...	1	...	...	...	1	...
David's Island, N. Y	3	3	...	2	1	...	...	...	1	1	1	3	...	...	...	...	...	...	...	...	...	...	...
Fort Omaha, Nebr	3	3	...	1	...	2	1	...	...	1	...	2	...	...	1	1	...	...	...	...	...	...	...
Fort Totten, N. Dak	3	3	...	3	...	...	...	...	1	...	...	1	...	...	1	1	...	...	1	...	...	1	...
Vancouver Barracks, Wash	3	3	...	1	1	2	1	...	1	...	...	2	...	...	...	...	1	...	...	...	...	1	...
Fort Bayard, N. Mex	2	...	2	1	1	...	...	...	...	...	...	...	...	1	...	1	...	...	...	1	...	1	...
Fort Custer, Mont	2	2	...	1	...	1	...	...	...	...	...	...	...	2	...	2	...	...	...	...	...	...	...
Fort Grant, Ariz	2	1	1	1	...	1	...	...	...	...	...	...	1	1	...	2	...	...	...	...	...	...	...
Fort McKinney, Wyo	2	...	2	2	...	...	...	...	1	...	...	1	...	1	...	1	...	...	...	...	...	...	...
Fort Meade, S. Dak	2	2	...	2	...	...	...	...	1	...	...	1	...	1	...	1	...	...	...	...	...	...	...
Presidio of San Francisco, Cal	2	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Fort Shaw, Mont	2	...	2	...	1	1	...	...	1	...	...	1	...	1	...	1	...	...	...	...	...	...	...
Fort Sherman, Idaho	2	2	...	1	1	...	...	...	1	...	1	2	...	...	...	...	...	...	...	...	...	...	...
Fort Walla Walla, Wash	2	2	...	2	...	...	...	...	1	...	...	1	...	1	...	1	...	...	...	...	...	...	...
Fort Wingate, N. Mex	2	2	...	2	...	...	...	...	...	...	...	...	...	2	...	2	...	...	...	...	...	...	...
Fort Assinniboine, Mont	1	1	...	1	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...
Augusta Arsenal, Ga	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Fort Barrancas, Fla	1	1	...	...	...	1	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...
Fort Bennett, S. Dak	1	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Benicia Barracks, Cal	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Boisé Barracks, Idaho	1	1	...	...	...	1	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...
Chicago, Ill	1	1	...	1	...	...	...	...	...	...	...	...	...	1*	...	1	...	...	...	...	...	...	...
Fort Davis, Tex	1	1	...	1	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...
Fort D. A. Russell, Wyo	1	1	...	1	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Fort Gibson, Ind. T	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...
Fort Lewis, Colo	1	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	1	...
Little Rock Bks, Ark	1	1	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Fort Maginnis, Mont	1	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	1	...
Fort Monroe, Va	1	1	...	1	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Camp at Monterey, Cal	1	1	...	...	...	1	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...
Camp Pilot Butte, Wyo	1	1	...	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Fort Porter, N. Y	1	1	...	1	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...
Fort Reno, Ind. T	1	1	...	...	...	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Rock Island Arsenal, Ill	1	1	...	1	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...
San Carlos, Ariz	1	...	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
St. Francis Bks, Fla	1	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	1	...
Fort Sam Houston, Tex	1	1	...	1	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...
Fort Sheridan, Ill	1	1	...	1	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...
Fort Snelling, Minn	1	1	...	...	...	1	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...
Fort Sully, S. Dak	1	1	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fort Supply, S. Dak	1	1	...	1	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...
Fort Thomas, Ariz	1	...	1	1	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...
Washington Bks. D. C	1	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1
Watertown Arsenal, Mass	1	1	...	1	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...
West Point, N. Y	1	1	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Total	96	77	19	61	13	22	4	...	28	5	8	45	2	26	6	34	2	5	1	1	2	11	6
At large	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...

TABLE XV.—*Twenty posts giving the highest admission rates for malarial diseases, rheumatism, diarrhœa, and venereal diseases, respectively during* 1890.

I—MALARIAL DISEASES.

Names of stations.	Mean strength.	Ratios per 1,000 of mean strength.			
		Admissions.	Deaths.	Discharges for disability.	Constantly non-effective.
Fort Sill, Okla	330	754.55		3.03	12.12
St. Francis Barracks, Fla	65	646.20			26.05
Fort Clark, Tex	481	451.14	2.08		18.38
Newport Barracks, Ky	62	371.00			4.33
Camp at Eagle Pass, Tex	56	357.14			8.07
Jackson Barracks, La	92	336.96			5.33
Fort Reno, Okla	296	334.46	3.38	3.38	10.49
Fort Brown, Tex	135	325.91			8.32
Fort Sam Houston, Tex	606	247.51		1.65	10.59
Fort Apache, Ariz	242	235.53		4.13	7.87
Mount Vernon Barracks, Ala	111	225.22			19.58
Fort Davis, Tex	201	208.95			15.09
Jefferson Barracks, Mo	406	192.12			5.22
Fort Myer, Va	137	175.17			7.60
Fort Lewis, Col	198	171.71			3.00
Plattsburg Barracks, N. Y	47	170.22			2.74
Fort Hamilton, N. Y	198	161.61			4.26
Fort Barrancas, Fla	86	139.53			5.77
Fort Bowie, Ariz	119	134.45			1.89
Fort Elliott Tex	122	131.14			1.50

II.—RHEUMATISM.

[Muscular and articular.]

Names of stations.	Mean strength.	Admissions.	Deaths.	Discharges for disability.	Constantly non-effective.
Fort Canby, Wash	63	222.22			3.96
Rock Island Arsenal, Ill	60	216.67		50.00	10.64
Fort Apache, Ariz	242	214.87		4.13	4.39
Fort Grant, Ariz	327	195.72		3.06	9.78
Fort Washakie, Wyo	111	171.17			4.32
Fort Totten, N. Dak	65	169.22			4.21
San Carlos, Ariz	250	168.00		4.00	4.54
Fort Robinson, Nebr	393	165.39		2.54	7.19
San Diego Barracks, Cal	61	163.93			4.63
Fort Bowie, Ariz	119	159.65			4.54
Benicia Barracks, Cal	76	157.89		13.16	11.32
Fort Snelling, Minn	290	148.25		3.45	8.41
Fort Stanton, N. Mex	133	142.75			3.19
Fort Lewis, Colo	198	141.41		5.05	4.94
Camp Sheridan, Wyo	65	138.46			3.54
Fort McPherson, Ga	188	138.30			3.29
Benicia Arsenal, Cal	52	134.61		19.23	2.95
Fort Sheridan, Ill	101	128.72			4.91
Fort Sherman, Idaho	272	128.68			2.56
Whipple Barracks, Ariz	241	128.63			5.71

III—DIARRHŒAL DISEASES.

Names of stations.	Mean strength.	Admissions.	Deaths.	Discharges for disability.	Constantly non-effective.
Fort Sam Houston, Tex	606	430.70		1.65	5.75
Fort Sill, Okla	330	384.84			7.13
Fort Barrancas, Fla	86	372.10			6.82
Madison Barracks, N. Y	248	342.73			4.42
Fort Monroe, Va	433	339.50			4.40
Fort McPherson, Ga	188	324.48			2.80
Jackson Barracks, La	92	304.34			4.52
Mount Vernon Barracks, Ala	111	279.27			5.03
Willets Point, N. Y. H	400	270.00			2.07
San Carlos, Ariz	250	252.00			3.25
Camp Pena Colorado, Tex	54	240.74			4.21
Fort Hamilton, N. Y	198	237.37			2.37
Fort Niobrara, Nebr	378	230.15			1.36
Fort Reno, Okla	296	229.73			5.13
Fort Robinson, Nebr	393	223.91			1.53
Watervliet Arsenal, N. Y	60	216.67			1.55
Fort Myer, Va	137	204.38			3.78
Fort Apache, Ariz	242	190.07			1.31
Fort Brown, Tex	135	185.18			1.93
Fort Du Chesne, Utah	260	165.38			.83

TABLE XV.—*Twenty posts giving the highest admission rates for malarial diseases, rheumatism, diarrhœa, etc*—Continued.

IV.—VENEREAL DISEASES.

Names of stations.	Mean strength.	Ratios per 1,000 of mean strength.			
		Admissions.	Deaths.	Discharges for disability.	Constantly non-effective.
Columbus Barracks, Ohio	502	380.46	....	41.83	24.74
Camp at Eagle Pass, Tex	56	303.58	....	....	18.15
Fort McPherson, Ga	188	223.40	....	5.32	17.46
Fort Barrancas, Fla	86	197.68	....	....	10.42
Fort Ontario, N. Y	43	186.04	....	23.26	5.61
Fort Brady, Mich	95	178.95	....	....	6.08
Jefferson Barracks, Mo	406	167.49	....	17.24	10.31
Jackson Barracks, La	92	163.04	....	10.87	16.40
Fort Brown, Tex	135	162.96	....	7.41	14.04
Newport Barracks, Ky	62	161.29	....	....	6.80
Fort Clark, Tex	481	153.85	....	2.08	12.69
Plattsburg Barracks, N. Y	47	148.93	....	....	6.59
Fort Preble Me	54	148.14	....	....	6.19
Fort Sam Houston, Tex	606	141.92	....	3.30	8.87
Fort Walla Walla, Wash	318	135.21	....	6.29	10.91
Alcatraz Island, Cal	92	119.56	....	10.87	8.40
Fort Grant, Ariz	327	119.27	....	....	7.88
Washington Barracks, D. C	255	117.66	....	....	10.19
Fort Wayne, Mich	211	113.74	....	....	3.67
Davids Island, N. Y. H	434	105.99	....	....	5.86

TABLE XVI.—*Twenty posts giving the highest non-effective rates for malarial diseases, rheumatism, diarrhœal and venereal diseases, respectively, during* 1890.

I.—MALARIAL DISEASES.

Names of stations.	Mean strength.	Constantly noneffective per 1,000 of mean strength.	Average number sick daily.	Average number of days each case was treated.
St. Francis Barracks, Fla	65	26.05	1.09	14.71
Mount Vernon Barracks, Ala	111	19.58	2.17	31.72
Fort Clark, Tex	481	18.38	8.84	14.87
Fort Davis, Tex	201	15.09	3.03	26.36
Fort Sill, Okla	330	12.12	4.00	5.86
Fort Sam Houston, Tex	606	10.59	6.42	15.62
Fort Reno, Okla	296	10.49	3.10	11.44
Fort Brown, Tex	135	8.32	1.12	9.32
Camp at Eagle Pass, Tex	56	8.07	0.45	8.25
Fort Apache, Ariz	242	7.87	1.90	12.19
Fort Myer, Va	137	7.60	1.04	15.83
Fort McPherson, Ga	188	6.38	1.20	18.25
Fort Barrancas, Fla	86	5.77	0.50	15.08
Fort McHenry, Md	99	5.65	0.56	29.14
Boise Barracks, Idaho	105	5.48	0.58	30.00
Jackson Barracks, La	92	5.33	0.49	5.77
Fort Leavenworth (post) Kans	586	5.28	3.10	15.48
Jefferson Barracks, Mo	406	5.22	2.12	9.92
Fort Marcy, N. Mex	110	4.33	0.48	19.33
Columbus Barracks, Ohio	502	4.32	2.17	14.14

TABLE XVI.—*Twenty posts giving the highest non-effective rates for malarial diseases, rheumatism, etc.*—Continued.

II.—RHEUMATISM.

[Muscular and articular.]

Names of stations.	Mean strength.	Constantly noneffective per 1,000 of mean strength.	Average number sick daily.	Average number of days each case was treated.
Benicia Barracks, Cal	76	11.32	0.86	26.17
Rock Island Arsenal, Ill	60	10.64	0.64	17.92
Fort McHenry, Md	99	10.40	1.03	34.18
Fort Grant, Ariz	327	9.78	3.20	18.25
Fort Snelling, Minn	290	8.41	2.44	20.70
Fort Sidney, Nebr	204	7.51	1.53	22.36
Fort Robinson, Nebr	393	7.19	2.83	15.68
Fort Mead, S. Dak	308	6.64	2.04	37.30
Fort Wingate, N. Mex	359	6.51	2.34	26.66
Fort Douglas, Utah	423	6.48	2.74	25.67
Fort Thomas, Ariz	106	6.46	0,68	31.25
Fort Logan, Colo	278	6.06	1.68	19.64
Whipple Barracks, Ariz	241	5.71	1.38	16.19
Fort Elliott, Tex	122	5.61	0.68	41.67
Fort Bennett, S. Dak	58	5.48	0.32	116.00
Fort Bayard, N. Mex	292	5.30	1.55	16.62
Fort Lewis, Colo	198	4.94	0.98	12.75
Fort Custer, Mont	331	4.92	1.63	22.00
Fort Sheridan, Ill	101	4.91	0.50	13.92
Fort Pembina, N. Dak	75	4.79	0.36	131.00

III.—DIARRHŒAL DISEASES.

Fort Schuyler, N. Y	78	8.11	0.63	77.00
Fort Sill, Okla	330	7.13	2.35	6.76
Fort Barrancas, Fla	86	6.82	0.59	6.69
Fort Sidney, Nebr	201	6.21	1.27	20.09
Fort Sam Houston, Tex	606	5.75	3.49	4.88
San Diego Barracks, Cal	61	5.48	0.33	40.67
Fort Reno, Okla	296	5.13	1.52	8.19
Mount Vernon Barracks, Ala	111	5.03	0.56	6.58
Jackson Barracks, La	92	4.52	0.42	5.43
Madison Barracks, N. Y	248	4.42	1.10	4.73
Fort Monroe, Va	433	4.40	1.90	4.73
Camp Pena Colorado, Tex	54	4.21	0.23	6.35
Fort Myer, Va	137	3.78	0.52	6.75
Fort Ringgold, Tex	119	3.48	0.41	8.88
Fort Elliott, Tex	122	3.44	0.42	8.50
San Carlos, Ariz	250	3.25	0.81	4.71
Fort McPherson, Ga	188	2.80	0.53	3.15
Fort Wadsworth, N. Y	111	2.76	0.31	28.00
Whipple Barracks, Ariz	241	2.66	0.64	6.88
Fort Huachuca, Ariz	275	2.61	0.72	29.11

IV.—VENEREAL DISEASES.

Columbus Barracks, Ohio	502	24.74	12.42	23.73
Camp at Eagle Pass, Tex	56	18.15	1.02	21.82
Fort McPherson, Ga	188	17.46	3.28	28.52
Jackson Barracks, La	92	16.40	1.51	36.73
Fort Brown, Tex	135	14.04	1.90	31.45
Fort Clark, Tex	481	12.69	6.10	30.11
Fort Walla Walla, Wash	318	10.91	3.47	29.44
Fort Logan, Colo	278	10.76	2.99	43.68
Fort Barrancas, Fla	86	10.42	0.90	19.24
Jefferson Barracks, Mo	406	10.31	4.19	22.49
Washington Barracks, D. C	255	10.19	2.60	31.65
Fort Sam Houston, Tex	606	8.87	5.38	22.81
Fort Gibson, Ind. T	47	8.57	0.40	147.00
Alcatraz Island, Cal	92	8.40	0.77	25.64
Fort McHenry, Md	99	8.33	0.82	50.17
Fort Grant, Ariz	327	7.88	2.58	24.13
Fort Supply, Ind. T	209	7.66	1.60	27.81
Fort Wingate, N. Mex	359	7.38	2.65	33.34
Fort Apache, Ariz	242	7.02	1.70	31.00
Fort McDowell, Ariz	52	6.95	0.36	66.00

TABLE XVII.—*Prevalence of alcoholism at the various posts and its influence on the effective force of the garrisons for the year* 1890.

Posts.	Mean strength.	Ratio per 1,000 of mean strength.	
		Admissions.	Constantly noneffective.
Fort Ontario, N. Y	43	279.07	3.19
Camp Del Rio, Tex	13	230.75	3.16
Watertown Arsenal, Mass	33	212.12	1.41
Fort McPherson, Ga	188	191.50	2.11
Camp Pena Colorado, Tex	54	166.67	1.22
Jackson Barracks, La	92	163.03	2.95
Whipple Barracks, Ariz	241	157.67	1.06
Willets Point, N. Y	400	157.50	1.89
Camp Pilot Butte, Wyo	78	153.84	1.40
Rock Island Arsenal, Ill	60	150.00	1.28
Fort Marcy, N. Mex	110	136.36	.82
Fort Brown, Tex	135	133.33	1.58
Fort Mackinac, Mich	94	127.66	1.25
Fort Bridger, Wyo	142	126.76	1.43
Fort Wayne, Mich	211	113.74	1.18
St. Francis Barracks, Fla	65	107.69	1.48
Allegheny Arsenal, Pa	29	103.45	.57
Fort Stanton, N. Mex	133	97.74	.97
Fort Thomas, Ky	31	96.78	.53
Fort Barrancas, Fla	86	93.03	.96
Fort McHenry, Md	99	90.91	3.87
Fort Crawford, Colo	67	89.55	1.35
Plattsburg Barracks, N. Y	47	85.11	.68
Fort Brady, Mich	95	84.21	.52
Fort Porter, N. Y	95	84.21	1.07
Newport Barracks, Ky	62	80.65	.35
Fort Spokane, Wash	200	80.00	.64
Fort Mason, Cal	64	78.12	.64
Fort Sherman, Idaho	272	77.21	.59
Fort Preble, Me	54	74.07	.20
Vancouver Barracks, Wash	420	73.87	1.28
Fort A. Lincoln, Nebr	95	73.68	.58
Fort Du Chesne, Utah	260	73.08	.51
Camp at Eagle Pass, Tex	56	71.43	.73
Fort Mojave, Ariz	28	71.43	.39
Fort Laramie, Wyo	14	71.43	.59
Fort Douglas, Utah	423	66.19	1.03
Fort Buford, N. D	359	65.64	.67
Fort Wadsworth, N. Y	111	63.06	.81
Fort Trumbull, Conn	52	57.69	.21
Fort Logan, Colo	278	57.56	.71
Field, Dept. of the East	35	57.14	.81
Fort Davis, Tex	201	54.72	.49
Fort Sidney, Nebr	204	53.92	.42
Fort Pembina, N. Dak	75	53.33	.26
Benicia Barracks, Cal	76	52.63	.25
Fort Keogh, Mont	347	51.87	.32
Camp Poplar River, Mont	97	51.55	.20
Fort Clark, Tex	481	49.89	.59
Fort Sheridan, Ill	101	49.50	.57
Fort D. A. Russell, Wyo	348	48.85	.58
Fort Walla Walla, Wash	318	47.17	.51
Fort Warren, Mass	86	46.51	.41
Fort Yates, N. Dak	287	45.30	.41
Mt. Vernon Barracks, Ala	111	45.05	.59
Fort Niobrara, Nebr	378	44.97	.72
Madison Barracks, N. Y	248	44.35	.46
Field, Dept. of the Columbia	23	43.48	.36
Fort Bowie, Ariz	119	42.02	.39
Fort Monroe, Va	433	41.57	.33
Fort Sam Houston, Tex	606	41.25	.47
Fort Lowell, Ariz	170	41.18	.56
Fort Hancock, Tex	49	40.82	.34
Field, Dept. of the Missouri	49	40.82	.11
Fort Verde, Ariz	52	38.46	.47
Angel Island, Cal	188	37.23	.35
Fort Columbus, N. Y	164	36.59	.28
Field, Dept. of Texas	83	36.14	.26
Fort Washakie, Wyo	111	36.04	.10
Fort Hamilton, N. Y	198	35.35	5.05
Fort McKinney, Wyo	146	34.25	.30
Fort Wingate, N. Mex	359	33.43	.43
Fort Canby, Wash	63	31.75	.57
Fort McIntosh, Tex	130	30.77	.19
Fort Robinson, Nebr	393	30.53	.28
Fort Pierre, S. Dak	34	29.41	.08
Fort Leavenworth, Kans	586	29.01	.36
Presidio of San Francisco, Cal	455	28.57	.23
Boisé Barracks, Idaho	105	28.57	.18
Camp Oklahoma, Okla	78	25.64	.14
Fort Schuyler, N. Y	78	25.64	.07
Field, Dept. of California	119	25.21	.12
Fort Gaston, Cal	40	25.00	.07
Field, Dept. of the Platte	126	23.81	.24
Fort Gibson, Ind. T	47	21.28	.23
Fort Sill, Okla	330	21.21	.32
Fort Union, N. Mex	142	21.13	.21
Fort Lewis, Colo	198	20.20	1.40
Washington Barracks, D. C	255	19.61	.26
Fort Randall, S. Dak	102	19.61	.83
Fort McDowell, Ariz	52	19.23	.05
Columbus Barracks, Ohio	502	17.93	.17
Fort Missoula, Mont	168	17.86	.13
Fort Bennett, S. Dak	58	17.24	.24
Fort Townsend, Wash	58	17.24	.09
Fort Ringgold, Tex	119	16.81	.12
Fort Elliott, Tex	122	16.39	.27
San Diego Barracks, Cal	61	16.39	.31
Fort Bliss, Tex	123	16.26	.07
Camp Sheridan, Wyo	65	15.38	.04
Fort Totten, N. Dak	65	15.38	.13
Fort Supply, Ind. T	209	14.35	.13
Fort Bidwell, Cal	71	14.08	.12
Fort Snelling, Minn	290	13.79	.16
Fort Meade, S. Dak	308	12.99	.26
Fort Omaha, Nebr	415	12.05	.28
Davids Island, N. Y	434	11.52	.07
Alcatraz Island, Cal	92	10.87	.12
Fort Riley, Kans	649	9.35	.09
Fort Grant, Ariz	327	9.17	.06
Fort Assinniboine, Mont	437	9.15	.09
Field, Dept. of Dakota	767	9.13	.04
Fort Sully, S. Dak	112	8.93	.05
Fort Apache, Ariz	242	8.26	.07
West Point, N. Y	378	7.94	.05
Fort Myer, Va	137	7.30	.08
Fort Huachuca, Ariz	275	7.25	.04
Fort Bayard, N. Mex	292	6.85	.03
Fort Reno, Okla	296	6.76	.06
Fort Adams, R. I	197	5.08	.01
Jefferson Barracks, Mo	406	4.93	.03
Fort Custer, Mont	331	3.02	.02

TABLE XVIII.—*Showing the relation of certain classes*

Orders of diseases, etc.	Total.	Arms of service.							
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.	All other.
Specific febrile and acute infectious diseases.									
Admissions:									
Officers	174.26	207.71	207.35	240.00	75.00	25.32	113.64	....	41.38
Enlisted men	180.72	172.88	240.35	175.63	244.93	223.00	182.95	82.16	29.70
Total	180.32	174.84	238.89	180.54	229.37	192.08	129.92	82.16	31.17
Noneffectiveness:									
Officers	6.36	5.48	10.89	10.52	1.64	2.01	3.36	....	1.30
Enlisted men	3.61	3.56	4.38	3.43	7.31	4.26	2.32	2.34	.66
Total	3.78	3.67	4.67	3.97	6.79	3.91	2.48	2.34	.74
Deaths:									
Officers	.47	....	2.34	....	....	....	....	....	....
Enlisted men	.86	.75	.87	1.52	2.34	....	....	....	1.83
Total	.82	.69	.96	1.37	2.06	....	....	....	1.54
Malarial diseases.									
Admissions:									
Officers	55.63	60.30	86.96	75.00	....	....	45.46	....	....
Enlisted men	95.37	84.02	130.17	98.31	98.48	98.59	39.60	83.50	34.65
Total	92.93	82.67	128.22	96.54	89.44	83.16	40.52	83.50	30.30
Noneffectiveness:									
Officers	2.79	2.56	3.82	2.92	....	....	6.91	....	....
Enlisted men	2.79	2.75	3.35	3.09	1.92	1.59	1.20	2.77	.88
Total	2.79	2.74	3.39	3.08	1.75	1.35	2.10	2.77	.77
Deaths:									
Officers	.47	....	2.34	....	....	....	....	....	....
Enlisted men	.12	.19	.15	....	....	....	....	....	....
Total	.15	.17	.27	....	....	....	....	....	....
Discharges:									
Enlisted men	.24	.19	.15	....	....	....	1.31	1.25	....
Typho-malarial fever.									
Admissions:									
Enlisted men	.18	....	.47	....	....	....	....	....	.99
Total	.17	....	.45	....	....	....	....	....	.87
Noneffectiveness:									
Enlisted men	.05	....	.13	....	....	....	....	....	.20
Total	.04	....	.13	....	....	....	....	....	.18
Deaths:									
Enlisted men	.04	....	.15	....	....	....	....	....	....
Total	.04	....	.14	....	....	....	....	....	....
Diarrhœal diseases.									
Admissions:									
Officers	65.68	78.73	76.92	100.00	25.00	....	53.03	....	....
Enlisted men	128.13	120.69	147.30	185.93	108.59	295.77	35.36	61.95	40.59
Total	124.29	118.31	144.13	179.40	100.92	249.50	38.14	61.95	35.50
Noneffectiveness:									
Officers	1.78	1.67	1.70	5.29	.48	....	.60	....	....
Enlisted men	1.63	1.47	2.05	2.01	4.18	2.37	.30	.73	.50
Total	1.64	1.48	2.03	2.26	3.85	2.00	.35	.73	.44
Discharges:									
Enlisted men	.33	.28	.44	.38	....	....	1.31	....	....
Septic disease.									
Admissions:									
Enlisted men	.09	.20	....	....	....	....	....	....	....
Total	.08	.19	....	....	....	....	....	....	....
Noneffectiveness:									
Enlisted men	.001	.002	....	....	....	....	....	....	....
Total	.001	.002	....	....	....	....	....	....	....
Venereal diseases.									
Admissions:									
Officers	8.04	10.05	3.34	20.00	....	....	7.58	....	....
Enlisted men	79.63	70.42	78.13	104.48	2.53	77.46	18.39	191.93	28.71
Total	75.22	66.99	74.77	98.06	2.29	65.35	16.69	191.93	25.11

of disease to arm of service and age of individual.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over
....	372.88	231.09	184.87	198.20	157.30	182.74	111.11	45.45	58.82
170.37	224.99	183.63	150.46	165.73	162.79	114.46	120.27	75.76	368.41
170.37	226.43	184.61	152.80	168.78	162.30	126.07	116.37	56.82	169.80
....	16.07	10.28	7.19	5.80	5.28	4.85	3.37	3.46	2.66
4.25	4.80	3.39	2.62	3.52	3.13	2.75	3.52	6.10	12.83
4.25	4.91	3.62	2.86	3.74	3.33	3.11	3.46	4.45	6.31
....	....	....	....	....	3.92	....	....	....	....
....	.94	.92	.66	....	1.57	.96	....	13.89	....
....	.92	.88	.61	....	1.85	.76	....	4.37	....
....	50.85	67.23	42.02	81.08	16.85	65.90	32.41	118.18	....
70.37	135.23	97.69	76.41	76.35	57.66	56.19	41.24	45.45	....
70.37	134.40	96.70	74.58	76.80	53.93	57.86	37.48	90.91	....
....	1.11	1.88	4.91	5.86	.26	3.46	1.28	1.59	....
2.03	4.15	3.06	2.02	2.08	1.25	.93	1.54	[illegible]	....
2.03	4.12	3.02	2.17	2.44	1.16	1.87	1.43	1.51	....
....	....	2.92	....	....	....	....	....	....	....
....	.31	....	....	.43	....	....	....	....	....
....	.31	.13	....	.38	....	....	....	....	....
3.44	.16	.26	....	....	.52	....	3.19	....	....
....	.51	....	....	.47	....	....	....	....	....
....	.50	....	....	.42	....	....	....	....	....
....	.14	....	....	.09	....	....	....	....	....
....	.14	....	....	.09	....	....	....	....	....
....	.16	....	....	....	....	....	....	....	....
....	.15	....	....	....	....	....	....	....	....
....	84.75	84.03	63.03	31.53	50.56	71.07	101.85	45.45	29.41
85.18	160.83	133.56	97.71	121.04	100.62	88.45	178.69	75.76	52.63
85.18	160.07	131.93	95.86	112.66	96.04	85.49	145.95	56.82	37.74
....	.70	4.67	.85	.25	.75	.85	.98	6.03	2.26
.52	1.96	1.33	1.50	1.70	1.58	1.42	5.15	2.82	.43
.52	1.95	1.44	1.47	1.57	1.51	1.32	3.39	4.83	1.60
....	.47	.13	.22	1.29	....	....	....	....	....
....	....	.28	....	....	....	....	....	....	....
....	....	.27	....	....	....	....	....	....	....
....	....	.002	....	.003	....	....	....	....	....
....	....	.002	....	.002	....	....	....	....	....
....	33.90	16.80	16.80	4.50	....	....	4.63	....	....
107.41	143.15	91.03	48.02	28.86	10.18	6.24	3.44	....	....
107.41	142.06	88.60	46.36	26.58	9.24	5.18	3.94	....	....

TABLE XVIII.—*Showing the relation of certain classes of disease*

Orders of diseases, etc.	Total.	Arms of service.							
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.	All other.
Venereal diseases—Continued.									
Noneffectiveness:									
Officers	.33	.32	.71	.41	....	....	.06	....	....
Enlisted men	5.16	4.59	5.13	6.88	.05	4.15	.96	11.95	2.20
Total	4.86	4.34	4.93	6.39	.05	3.50	.82	11.95	1.93
Discharges:									
Enlisted men	2.89	1.68	2.62	1.91	....	....	1.81	18.09	....
Zoögenous diseases.									
Admissions:									
Enlisted men	35.88	18.23	17.29	25.92	10.10	84.51	4.24	280.12	2.97
Total	33.67	17.20	16.52	23.95	9.18	71.29	3.58	280.12	2.60
Noneffectiveness:									
Enlisted men	1.19	.49	.40	1.29	.05	1.84	.03	10.57	.07
Total	1.12	.46	.39	1.19	.05	1.55	.03	10.57	.06
Deaths:									
Enlisted men	.04	....	....	.38	....	....	....	....	....
Total	.04	....	....	.34	....	....	....	....	....
Dietic diseases.									
Admissions:									
Officers	5.36	6.70	13.38	....	....	....	....	....	....
Enlisted men	43.88	59.64	20.44	60.47	55.56	147.89	31.12	4.71	14.85
Total	41.51	56.63	20.12	55.87	50.46	124.75	26.22	4.71	12.99
Noneffectiveness:									
Officers	.08	.11	.16	....	....	....	....	....	....
Enlisted men	.53	.69	.23	.81	.61	1.78	.31	.12	.35
Total	.50	.66	.23	.75	.55	1.50	.26	.12	.31
Deaths:									
Enlisted	.20	.28	.29	....	....	....	....	....	....
Total	.19	.26	.27	....	....	....	....	....	....
Discharges:									
Enlisted men	.49	.47	.58	.76	....	....	1.31	....	....
Constitutional diseases.									
Admissions:									
Officers	90.48	127.30	63.55	140.00	50.00	12.66	53.03	....	13.79
Enlisted men	87.77	91.98	100.93	81.86	113.64	147.89	62.28	43.77	24.75
Total	87.94	93.98	99.25	86.28	107.81	126.73	60.78	43.77	23.38
Noneffectiveness:									
Officers	6.83	9.21	6.22	10.11	2.47	.07	2.26	....	2.85
Enlisted men	4.33	4.65	4.56	4.31	6.21	3.73	3.60	3.29	1.19
Total	4.48	4.91	4.64	4.75	5.87	3.16	3.39	3.29	1.40
Deaths:									
Enlisted men	.37	.37	.15	.38	....	....	1.31	....	1.84
Total	.34	.35	.14	.34	....	....	1.05	....	1.54
Discharges:									
Enlisted men	2.81	2.52	3.06	3.43	9.35	4.34	1.31	3.12	....
Developmental diseases.									
Admissions:									
Officers	.67	1.68	....	....	....	....	....	....	....
Enlisted men	.48	.60	.47	.41	....	....	....	.67	....
Total	.50	.67	.45	.38	....	....	....	.67	....
Noneffectiveness:									
Officers	.42	1.05	....	....	....	....	....	....	....
Enlisted men	.05	.04	.02	.21	....	....	....	.10	....
Total	.08	.10	.02	.19	....	....	....	.10	....
Discharges:									
Enlisted men	.77	1.03	.58	.76	....	....	....	....	1.84
Parasitic diseases.									
Admissions:									
Enlisted men	3.65	2.22	3.77	3.29	....	2.35	....	18.18	.99
Total	3.42	2.09	3.60	3.04	....	1.98	....	18.18	.87
Noneffectiveness:									
Enlisted men	.09	.07	.06	.12	....	.03	....	.49	.02
Total	.09	.07	.06	.11	....	.03	....	.49	.02

to arm of service and age of individual—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	.65	1.32	.31	.04	....	....	.27	....	....
4.18	8.79	6.06	3.54	2.01	.79	.56	.10	....	....
4.18	8.71	5.90	3.87	1.82	.72	.46	.17	....	....
3.44	4.99	3.15	1.97	1.29	.52	.96	....	....	....
88.89	84.88	27.93	12.78	9.31	4.52	5.20	13.75	....	....
88.89	84.04	27.02	12.09	8.44	4.11	4.32	7.89	....	....
2.46	2.97	.93	.35	.26	.04	.12	.13	....	....
2.46	2.94	.90	.33	.24	.04	.10	.08	....	....
....	....	.13	....	....	....	....	....	....	....
....	....	.13	....	....	....	....	....	....	....
....	....	4.20	4.20	13.51	5.62	10.15	....	....	....
3.70	13.30	25.52	47.55	86.13	111.36	103.02	158.08	106.06	157.89
3.70	13.17	24.82	45.24	79.33	101.69	87.22	90.73	39.77	56.60
....	....	.02	.07	.16	.23	.08	....	....	....
.02	.18	.26	.53	.75	1.49	2.16	2.01	1.66	1.73
.02	.17	.25	.50	.70	1.36	1.81	1.16	.62	.62
....	....	.13	....	....	.52	.96	6.37	....	....
....	....	.13	....	....	.46	.76	3.21	....	....
....	.78	.39	.22	.43	.52	.96	....	....	....
....	50.85	42.02	67.23	40.54	146.07	157.36	125.00	100.00	58.82
18.52	78.31	75.00	62.93	127.56	132.28	136.32	213.06	378.79	263.16
18.52	78.04	73.93	63.16	119.41	133.38	139.89	175.53	204.53	132.06
....	11.56	1.36	5.04	.78	9.54	8.44	10.83	14.45	15.47
.61	3.18	3.96	3.99	5.44	6.59	6.56	10.45	24.44	9.37
.61	3.27	3.88	4.05	5.00	6.86	6.88	10.61	18.20	13.28
....	.16	.13	....	1.29	1.57	....	3.18	....	....
....	.15	.13	....	1.14	1.39	....	1.61	....	....
....	1.72	2.76	1.97	3.45	5.76	3.86	9.55	13.89	50.00
....	....	....	....	....	....	....	....	....	29.41
....	.37	.57	....	....	.57	2.08	3.44	....	52.63
....	.33	.55	....	....	.51	1.73	1.97	....	37.74
....	....	....	....	....	....	....	....	....	18.37
....	.02	.04	....	....	.02	.07	.76	....	26.37
....	.02	.04	....	....	.02	.06	.44	....	21.25
....	.78	.53	.22	....	1.05	1.93	9.55	27.78	....
7.41	6.06	4.11	1.89	2.33	.57	2.08	....	....	....
7.41	6.00	3.98	1.79	2.11	.51	1.73	....	....	....
.08	.20	.07	.07	.10	.005	.03	....	....	....
.08	.19	.07	.07	.09	.004	.03	....	....	....

TABLE XVIII.—*Showing the relation of certain classes o*

Orders of diseases, etc.	Total.	Arms of service.							
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.	All other.
Diseases of the nervous system.									
Admissions:									
Officers	75.07	100.50	63.55	60.00	100.00	12.66	90.91	....	27.59
Enlisted men	58.61	57.53	65.56	67.87	55.56	89.20	32.53	47.81	25.74
Total	59.63	59.96	65.47	67.28	59.64	77.23	41.72	47.81	25.97
Noneffectiveness:									
Officers	8.16	13.61	5.36	.40	2.12	.45	11.39	....	5.08
Enlisted men	1.73	1.85	1.67	1.80	1.01	2.67	2.09	1.58	.65
Total	2.13	2.51	1.84	1.70	1.11	2.32	3.55	1.58	1.21
Deaths:									
Officers	4.68	8.19	....	....	35.09	....	5.26	....	....
Enlisted men	.45	.47	.29	.38	....	....	1.31	.62	.92
Total	.79	1.04	.27	.34	4.12	....	2.10	.62	.77
Discharges:									
Enlisted men	2.73	3.36	2.91	1.52	....	2.17	3.98	1.87	......
Diseases of the eye.									
Admissions:									
Officers	14.74	21.78	10.03	15.00	....	....	7.58	....	13.79
Enlisted men	17.02	17.23	21.22	18.92	20.20	37.56	2.83	3.37	3.96
Total	16.88	17.48	20.72	18.62	18.35	31.68	3.58	3.37	5.19
Noneffectiveness:									
Officers	2.56	1.90	1.22	4.79	....	....	1.43	....	6.07
Enlisted men	.69	.91	.59	.69	.53	.77	.53	.12	.21
Total	.81	.97	.62	1.01	.48	.65	.67	.12	1.2
Discharges:									
Enlisted men	1.59	1.96	1.46	1.14	....	....	2.62	....	2.75
Diseases of the ear.									
Admissions:									
Officers	3.35	1.68	....	15.00	....	....	7.58	....	......
Enlisted men	9.41	11.18	8.17	8.64	10.10	16.43	7.07	8.75	.9
Total	9.04	10.64	7.81	9.12	9.18	13.86	7.15	8.75	.8
Noneffectiveness:									
Officers	.11	.03	....	.73	....	....	......	....	......
Enlisted men	.43	.55	.31	.18	.28	1.22	.31	.83	.01
Total	.42	.52	.29	.22	.25	1.03	.26	.83	.01
Discharges:									
Enlisted men	.90	1.31	.44	.76	....	....	2.62	.63	......
Diseases of the nose.									
Admissions:									
Officers	1.34	1.68	3.34	....	....	....	......	....	......
Enlisted men	2.46	2.82	2.04	4.11	5.05	18.78	......	....	......
Total	2.39	2.28	2.10	3.80	4.59	15.84	......	....	......
Noneffectiveness:									
Officers	.46	.59	1.14	....	....	....	......	....	......
Enlisted men	.12	.10	.13	.11	.36	1.25	......	....	......
Total	.14	.13	.18	.10	.33	1.06	......	....	......
Discharges:									
Enlisted men	.16	.19	.29	....	....	....	......	....	......
Diseases of the respiratory system.									
Admissions:									
Officers	125.34	165.83	150.50	150.00	25.00	25.32	60.61	....	13.79
Enlisted men	110.54	115.66	109.42	153.02	189.40	213.61	39.60	50.50	28.71
Total	111.45	118.50	111.26	152.80	174.31	184.15	42.91	50.50	26.84
Noneffectiveness:									
Officers	5.47	6.34	4.33	8.96	1.78	.73	7.49	....	1.21
Enlisted men	3.20	3.18	3.13	4.66	7.51	5.72	1.33	2.13	.4
Total	3.34	3.36	3.18	4.98	6.99	4.94	2.30	2.13	.56
Deaths:									
Officers	.94	2.34	....	....	....	....	......	....	......
Enlisted men	1.51	1.03	2.18	1.52	....	....	1.31	1.87	1.7
Total	1.46	1.12	2.06	1.37	....	....	1.05	1.87	2.3
Discharges:									
Enlisted men	2.44	2.05	2.62	4.95	4.67	2.17	1.31	1.25	.9

disease to arm of service and age of individual—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	84.75	33.61	105.04	72.07	112.36	65.99	87.96	45.45	29.41
29.63	65.17	58.27	49.21	61.92	55.40	54.11	79.04	166.67	105.26
29.63	65.37	57.47	52.18	62.87	60.60	56.13	82.84	90.91	56.60
....	9.24	1.12	9.50	4.38	10.07	10.90	14.69	8.64	1.85
1.02	1.45	1.35	1.87	2.33	1.97	3.52	2.49	6.35	3.75
1.02	1.52	1.34	2.28	2.52	2.71	4.77	7.69	7.78	2.53
....	....	....	....	6.31	3.92	7.07	12.94	6.37	....
....	....	.26	.88	....	.52	1.93	6.37	....	....
....	....	.25	.82	.76	.92	3.03	9.63	4.37	....
....	3.28	2.36	2.85	3.02	2.09	.96	6.37	13.89	....
....	16.95	33.61	16.81	27.03	5.62	....	....	15.18	....
3.70	18.36	20.84	14.67	9.31	11.87	11.45	41.24	30.30	105.26
3.70	18.34	21.26	14.78	10.97	11.30	9.50	23.67	22.73	37.74
....	.42	2.50	6.50	2.69	.09	.54	....	8.44	....
.61	.65	.76	.65	.34	.41	1.25	2.90	2.82	4.90
.01	.64	.82	.96	.56	.38	1.13	1.66	6.34	1.76
....	1.25	1.84	1.53	.86	1.57	1.93	6.37	13.89	....
....	....	4.20	4.20	9.01	....	....	....	9.09	....
....	12.63	9.64	7.57	8.38	7.35	6.24	6.87	....	....
....	12.51	9.46	7.39	8.44	6.68	5.18	3.94	5.68	....
....	....	.10	.15	.38	....	....	....	.15	....
....	.70	.41	.28	.51	.14	.24	.05	....	....
....	.70	.41	.27	.56	.13	.20	.03	.09	....
....	1.09	.92	.44	1.29	.52	.96	....	13.89	....
....	....	....	....	....	11.24	....	....	....	....
....	2.86	3.12	1.89	.93	3.39	....	3.44	....	....
....	2.83	3.02	1.79	.84	4.11	....	1.97	....	....
....	....	....	....	....	3.88	....	....	....	....
....	.15	.16	.07	.01	.17	....	.47	....	....
....	.15	.15	.07	.01	.51	....	.27	....	....
....	.16	.26	.22	....	....	....	....	....	....
....	152.54	109.24	105.04	85.59	134.83	142.13	157.41	154.55	147.06
37.04	117.88	106.62	107.40	106.15	119.84	106.14	137.46	212.12	105.26
37.04	118.23	106.71	107.27	104.22	121.21	112.26	145.95	176.13	132.06
....	1.53	3.70	2.22	3.46	10.33	8.01	7.01	5.68	10.07
.48	3.04	2.82	3.18	4.36	4.32	2.23	3.32	15.48	3.61
.48	3.02	2.85	3.13	4.28	4.87	3.21	4.90	9.36	7.75
....	....	....	....	....	7.84	....	....	....	....
....	1.40	.92	.66	3.02	2.62	1.93	6.37	13.89	50.00
....	1.39	.88	.61	2.66	3.23	1.52	3.21	4.37	14.70
....	2.81	2.23	2.63	2.59	2.62	....	3.10	13.89	....

TABLE XVIII.—*Showing the relation of certain classes of*

Orders of diseases, etc.	Total.	Arms of service.							
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.	All other.
Diseases of the circulatory system.									
Admissions:									
Officers	6.03	10.05	3.34	10.00	....	....	......	....	......
Enlisted men	8.88	9.57	7.55	12.75	15.15	11.74	7.07	4.04	5.94
Total	8.71	9.60	7.36	12.54	13.76	9.90	5.96	4.04	5.19
Noneffectiveness:									
Officers	1.76	3.67	.34	1.67	....	....	......	....	......
Enlisted men	.67	.83	.49	1.08	.96	.15	.16	.29	.23
Total	.74	.99	.49	1.13	.87	.12	.13	.29	.20
Deaths:									
Officers	1.40	1.17	....	....	....	....	......	....	9.62
Enlisted men	.41	.47	.44	.38	....	....	......	....	.92
Total	.49	.52	.41	.34	....	....	......	....	2.31
Discharges:									
Enlisted men	2.28	2.33	1.60	5.72	7.03	....	......	1.25	......
Diseases of the digestive system.									
Admissions:									
Officers	151.47	175.88	183.95	185.00	100.00	37.97	128.79	....	34.48
Enlisted men	171.97	172.27	196.82	191.69	128.79	260.56	55.16	146.80	64.37
Total	170.70	172.48	196.25	191.19	126.15	225.73	66.75	146.80	59.74
Noneffectiveness:									
Officers	8.30	8.70	8.59	5.10	.68	.45	20.03	....	6.16
Enlisted men	3.02	2.98	3.23	3.61	2.42	5.89	1.64	2.66	1.29
Total	3.35	3.31	3.47	3.73	2.26	5.04	4.53	2.66	1.99
Deaths:									
Officers	1.87	3.51	....	....	....	....	......	....	4.81
Enlisted men	.24	.28	....	....	4.68	2.17	......	....	......
Total	.38	.52	....	....	4.12	1.75	......	....	.77
Discharges:									
Enlisted men	2.86	1.96	2.04	4.57	....	4.35	3.93	2.50	1.84
Diseases of the lymphatic system.									
Admissions:									
Officers	2.68	5.03	....	5.00	....	....	......	....	......
Enlisted men	6.16	5.54	6.60	10.28	5.05	....	4.24	8.75	......
Total	5.94	5.51	6.31	9.88	4.50	....	3.58	8.75	......
Noneffectiveness:									
Officers	.08	.09	....	.34	....	....	......	....	......
Enlisted men	.56	.45	.62	.87	1.54	....	.18	.80	.02
Total	.53	.45	.60	.83	1.39	....	.15	.80	.02
Discharges:									
Enlisted men	.04	.09	....	....	....	....	......	....	......
Diseases of the genito-urinary system.									
Admissions:									
Officers	22.12	21.78	36.79	40.00	25.00	....	......	....	......
Enlisted men	17.85	17.43	16.35	20.98	25.25	25.82	11.31	26.94	8.91
Total	18.11	17.67	17.27	22.42	25.23	21.78	9.54	26.94	7.79
Noneffectiveness:									
Officers	3.41	1.97	11.43	2.10	1.71	....	......	....	......
Enlisted men	.98	.93	1.15	.92	1.13	1.77	.42	1.13	.30
Total	1.13	.99	1.61	1.01	1.18	1.49	.85	1.13	.20
Deaths:									
Officers	2.84	1.17	7.01	....	17.04	....	......	....	......
Enlisted men	.33	.37	.15	....	2.34	....	1.31	....	.92
Total	.49	.43	.55	....	4.12	....	1.05	....	.77
Discharges:									
Enlisted men	1.34	1.03	1.60	1.91	2.34	....	......	3.12	......
Diseases of the locomotor system.									
Admissions:									
Officers	4.02	6.70	3.34	....	....	....	7.58	....	......
Enlisted men	4.31	4.23	5.19	6.17	2.53	....	5.06	2.02	......
Total	4.29	4.37	5.11	5.70	2.29	....	5.96	2.02	......

disease to arm of service and age of individual—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	....	....	4.20	....	5.62	20.30	4.68	18.18	....
3.70	9.77	7.09	7.10	6.52	15.26	17.69	13.75	15.15	....
3.70	9.67	6.86	6.94	5.91	14.38	18.13	9.86	17.04	....
....	....	....	.01	1.42	.97	5.60	3.89	1.74	....
.26	.75	.47	.62	.37	1.23	1.55	1.21	.12	....
.26	.74	.46	.59	.47	1.21	2.24	2.86	1.14	....
....	....	....	....	....	....	....	9.71	....	....
....	....	.13	....	.86	2.62	1.98	....	....	....
....	....	.13	....	.76	2.31	1.52	4.82	....	....
....	2.81	1.71	1.53	1.73	4.19	2.89	6.37	13.89	....
....	152.54	168.07	176.47	153.15	129.21	126.90	162.04	100.00	205.88
159.26	228.86	176.52	140.53	136.87	129.45	96.77	147.77	166.67	....
159.26	228.11	176.23	142.44	138.40	129.42	101.90	153.85	124.99	132.06
....	8.13	3.58	8.76	9.22	12.34	12.45	6.54	2.62	16.76
2.57	3.60	2.82	2.79	3.17	2.74	1.86	5.12	2.94	....
2.57	3.64	2.85	3.11	3.73	3.62	3.61	5.78	2.74	10.75
....	....	....	....	....	....	3.53	6.47	....	20.83
....	.16	.26	....	.43	.52	....	8.18	....	....
....	.15	.26	....	.38	.46	.76	4.82	....	14.70
....	2.18	1.97	2.63	2.59	3.14	.96	9.55	13.89	....
....	....	....	16.81	....	....	....	....	....	....
3.70	8.08	7.23	5.44	5.12	2.83	....	3.44	....	....
3.70	8.00	6.99	6.05	4.64	2.57	....	1.97	....	....
....	....	....	.52	....	....	....	....	....	....
.19	.87	.60	.42	.40	.40	....	.07	....	....
.19	.86	.58	.42	.36	.37	....	.04	....	....
....	.16	....	....	....	....	....	....	....	....
....	16.95	25.21	25.21	18.02	11.24	30.46	18.50	27.27	29.41
7.41	29.81	16.31	13.01	8.38	11.30	14.57	10.81	30.30	....
7.41	29.68	16.60	13.66	9.28	11.30	17.27	13.81	28.41	18.87
....	.14	5.86	4.81	5.50	1.22	1.49	2.61	2.09	.24
.19	1.41	1.06	.66	.69	.56	.87	.45	1.91	....
.19	1.40	1.21	.88	1.14	.62	.97	1.87	2.02	.16
....	....	....	2.92	....	....	3.53	9.71	....	....
....	.16	.13	....	1.29	.52	.96	....	13.89	....
....	.15	.13	.20	1.14	.46	1.52	4.82	4.37	....
....	3.12	1.05	.66	.43	....	.96	....	....	....
....	....	21.01	....	....	....	....	4.63	....	....
3.70	4.04	4.25	5.44	3.26	5.65	1.04	6.87	....	....
3.70	4.00	4.80	5.15	2.95	5.14	.86	5.92	....	....

TABLE XVIII.—*Showing the relation of certain classes of*

Orders of diseases, etc.	Total.	Arms of service.							
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.	All other.
Diseases of the locomotor system—Continued.									
Noneffectiveness:									
Officers	.48	1.11	.14	....	....	....	.12	....	......
Enlisted men	.41	.41	.48	.45	1.74	....	.44	.11	......
Total	.42	.45	.46	.44	1.58	....	.39	.12	......
Discharges:									
Enlisted men	.77	.75	1.02	1.14	....	....	......	.62	......
Diseases of the integumentary system.									
Admissions:									
Officers	28.82	33.50	26.76	60.00	....	12.66	15.15	....	......
Enlisted men	79.82	66.99	106.59	99.55	65.66	112.68	18.39	72.73	23.76
Total	76.22	65.09	103.01	96.54	59.64	97.03	17.88	72.73	20.78
Noneffectiveness:									
Officers	1.28	2.34	.91	.99	....	.17	.27	....	......
Enlisted men	2.11	1.89	2.70	2.61	1.20	3.08	.71	1.94	.70
Total	2.07	1.91	2.62	2.49	1.09	2.63	.64	1.94	.61
Deaths:									
Officers	.47	....	2.34	....	....	....	......	....	......
Total	.04	....	.14	....	....	....	......	....	......
Discharges:									
Enlisted men	.20	.28	.29	....	....	....	......	....	......
Unclassified.									
Admissions:									
Officers	10.05	10.05	10.03	20.00	....	....	15.15	....	......
Enlisted men	17.59	17.58	19.34	17.28	7.58	9.39	12.73	27.61	3.96
Total	17.12	17.10	18.92	17.48	6.88	7.92	13.11	27.61	3.46
Noneffectiveness:									
Officers	.36	.51	.59	.18	....	....	.15	....	......
Enlisted men	.41	.41	.35	.42	.16	.24	.14	1.15	.08
Total	.41	.42	.36	.40	.14	.20	.12	1.15	.07
Deaths:									
Enlisted men	.04	....	.15	....	....	....	......	....	......
Total	.04	....	.14	....	....	....	......	....	......
Discharges:									
Enlisted men	.12	.09	....	.76	....	....	......	....	......
Total for diseases.									
Admissions:									
Officers	545.17	1,046.90	943.14	1,135.00	400.00	126.58	606.06	....	144.63
Enlisted men	1,159.92	1,118.38	1,304.20	1,347.59	1,164.14	1,873.24	520.51	1,166.83	343.56
Total	1,140.55	1,114.32	1,287.99	1,331.43	1,094.04	1,600.00	533.97	1,166.83	318.61
Noneffectiveness:									
Officers	51.04	61.25	57.56	54.49	10.89	3.88	54.09	....	24.67
Enlisted men	33.80	32.83	35.20	39.60	39.17	42.51	16.62	45.12	10.05
Total	34.86	34.44	36.21	40.73	36.58	36.47	22.52	45.12	11.86
Deaths:									
Officers	12.63	16.87	14.02	....	52.63	....	5.26	....	14.42
Enlisted men	4.60	4.20	4.81	4.57	9.35	2.17	5.24	2.50	9.17
Total	5.25	5.10	5.35	4.12	14.44	1.75	5.25	2.50	10.01
Discharges:									
Enlisted men	22.49	21.56	21.70	29.72	23.36	13.04	20.96	33.69	7.24
Total for injuries.									
Admissions:									
Officers	70.38	82.08	107.02	70.00	....	12.66	45.46	....	20.69
Enlisted men	255.08	231.71	354.85	301.11	194.44	370.89	28.29	140.74	50.50
Total	243.70	223.22	343.24	283.55	176.60	314.85	30.99	140.74	46.75
Noneffectiveness:									
Officers	4.35	6.47	3.24	5.84	....	.73	2.78	....	.47
Enlisted men	8.08	7.21	11.64	9.30	4.69	10.69	1.11	4.48	1.75
Total	7.85	7.17	11.27	9.04	4.26	9.13	1.37	4.48	1.59
Deaths:									
Officers	1.87	3.51	2.34	....	....	....	......	....	......
Enlisted men	3.58	2.05	7.72	1.91	4.68	....	2.62	1.87	.92
Total	3.45	2.16	7.40	1.72	4.12	....	2.10	1.87	.77
Discharges:									
Enlisted men	2.53	2.61	3.06	3.05	2.84	....	......	3.50	......

disease to arm of service and age of individual—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	....	2.95	....	....	....	....	.08	....	....
.12	.19	.53	.67	.36	.33	.23	.17	....	....
.12	.20	.61	.63	.33	.30	.18	.13	....	....
....	.62	1.18	.88	....	.52	.96	....	....	....
....	67.80	33.61	42.02	27.03	22.47	30.46	18.50	....	29.41
122.22	111.48	84.08	56.78	58.19	54.27	42.66	44.67	15.15	....
122.22	111.65	82.43	55.99	55.27	51.86	40.59	33.53	5.68	18.87
....	.60	.85	1.72	.42	4.11	1.95	.18	....	.64
2.96	2.61	2.04	1.80	2.57	1.43	1.51	1.02	.37	....
2.96	2.59	2.00	1.80	2.37	1.68	1.58	.66	.14	.41
....	....	....	2.92	....	....	....	....	....	....
....	....	....	.20	....	....	....	....	....	....
....	....	.13	.22	.86	....	.96	....	....	....
....	16.95	12.61	8.40	9.01	16.86	15.23	4.63	....	....
3.70	25.60	17.72	13.72	13.04	11.87	10.41	13.75	....	52.63
3.70	25.51	17.56	13.44	12.66	12.33	11.23	9.86	....	18.87
....	.23	.68	.07	.17	1.54	.13	.04	....	....
.05	.63	.35	.27	.29	.53	.19	.46	....	6.79
.05	.63	.36	.26	.28	.63	.18	.28	....	2.43
....	....	.13	....	....	....	....	....	....	....
....	....	.13	....	....	....	....	....	....	....
....	.16	.13	....	....	....	....	....	....	50.00
....	1,101.69	886.56	882.35	770.27	825.84	918.78	833.33	681.82	617.65
925.92	1,482.15	1,150.43	920.51	1,035.85	1,009.02	875.13	1,240.55	1,318.18	1,263.16
925.92	1,478.40	1,141.82	913.48	1,010.97	992.30	882.56	1,067.06	920.45	849.06
....	50.38	40.86	52.64	40.53	60.61	58.76	51.77	54.89	68.33
22.01	42.44	32.49	27.89	31.39	29.13	27.97	41.43	66.42	69.79
22.01	42.52	32.76	29.21	32.25	32.01	33.21	45.83	59.21	68.85
....	....	2.92	5.85	6.31	15.69	14.13	38.84	6.37	20.83
....	3.28	3.15	2.19	7.33	10.47	8.68	25.48	41.67	50.00
....	3.23	3.14	2.45	7.21	11.09	9.85	32.10	17.47	29.41
6.87	26.52	21.03	18.19	19.84	23.04	18.32	54.14	125.00	100.00
....	84.75	84.03	79.83	76.58	56.18	60.91	50.93	90.91	29.41
177.78	296.23	297.46	212.68	209.03	190.50	152.97	185.57	106.06	157.89
177.78	294.15	290.50	205.60	196.63	178.22	137.30	128.21	96.59	75.47
....	14.63	4.22	2.10	3.81	3.39	4.53	3.46	9.32	.32
4.97	8.33	9.36	7.14	6.74	6.78	7.77	6.12	3.56	1.87
4.97	8.40	9.31	6.87	6.47	6.47	7.22	4.99	7.16	.88
....	....	8.77	....	....	3.92	....	....	....	....
6.87	3.74	3.81	3.51	3.45	3.14	1.93	3.18	....	....
6.87	3.70	4.02	3.26	3.04	3.23	1.52	1.61	....	....
3.44	2.34	3.15	1.97	2.59	2.62	1.93	....	....	....

TABLE XVIII.—*Showing the relation of certain classes of*

Names of disease, etc.	Total.	Arms of service.							
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.	All other.
Total diseases and injuries.									
Admissions:									
Officers	915.55	1,128.98	1,050.17	1,205.00	400.00	139.24	651.52	....	165.52
Enlisted men	1,415.00	1,350.09	1,658.54	1,648.70	1,358.59	2,244.13	548.88	1,307.07	394.06
Total	1,384.25	1,337.55	1,631.23	1,614.98	1,270.64	1,914.85	564.96	1,307.07	365.36
Noneffectiveness:									
Officers	55.88	67.72	60.80	60.33	10.89	4.61	56.87	....	25.15
Enlisted men	41.88	40.04	46.84	48.91	43.86	53.20	17.73	49.60	11.80
Total	42.71	41.61	47.48	49.77	40.84	45.60	23.89	49.60	13.47
Deaths:									
Officers	14.50	19.88	16.86	....	52.63	....	5.26	....	14.42
Enlisted men	8.18	6.25	12.58	6.48	14.02	2.17	7.86	4.87	10.09
Total	8.69	7.26	12.75	5.84	18.56	1.75	7.35	4.87	10.78
Discharges:									
Enlisted men	25.01	24.17	24.76	32.77	25.70	13.04	20.96	36.18	7.34

disease to arm of service and age of individual—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	1,186.44	970.59	962.18	846.85	882.02	979.76	884.20	772.73	647.06
1,103.70	1,778.86	1,447.89	1,133.19	1,244.88	1,199.65	1,028.16	1,426.12	1,424.24	1,421.05
1,103.70	1,772.55	1,432.32	1,124.08	1,207.60	1,170.52	1,019.86	1,195.27	1,017.04	924.53
....	65.01	45.08	54.74	44.34	64.00	63.29	55.23	64.21	68.65
26.96	50.77	41.84	35.03	38.18	35.91	35.74	47.55	49.99	71.66
26.96	50.92	42.07	26.06	38.72	38.48	40.43	50.82	66.37	69.73
....	....	11.70	5.85	6.31	19.61	14.13	38.84	6.87	20.83
6.87	7.02	6.96	5.70	10.79	13.61	10.61	28.06	41.67	50.00
6.87	6.98	7.17	5.71	10.26	14.82	11.37	33.71	17.47	29.41
10.31	23.86	24.17	20.16	22.43	25.65	20.25	54.14	125.00	100.00

TABLE XIX.—*Showing the relation of certain classes*

Orders of diseases, etc.	Total.	Nativities.				
		American U. S.	Irish.	German.	English.	Canadian.
Specific febrile and acute infectious diseases.						
Admissions:						
Officers	174.26	171.26	133.33	266.67	250.00	285.71
Enlisted men	180.72	195.14	175.86	157.62	161.42	131.76
Total	180.82	192.89	175.45	158.16	162.18	134.26
Noneffectiveness:						
Officers	6.86	6.41	2.37	4.75	4.45	7.04
Enlisted men	3.61	3.77	3.74	3.05	3.78	3.89
Total	3.78	4.02	3.72	3.06	3.79	3.85
Deaths:						
Officers	.47	.49	....	....	....	....
Enlisted men	.86	.75	1.78	.94	....	....
Total	.82	.72	1.76	.94	....	....
Malarial diseases.						
Admissions:						
Officers	55.68	49.54	133.33	133.33	....	....
Enlisted men	95.37	96.61	96.84	99.66	95.84	103.53
Total	92.98	92.16	99.17	99.83	94.52	101.85
Noneffectiveness:						
Officers	2.79	2.84	1.28	2.92	....	....
Enlisted men	2.79	2.80	2.78	2.71	3.61	3.83
Total	2.79	2.80	2.71	2.71	3.58	3.77
Deaths:						
Officers	.47	.49	....	....	....	....
Enlisted men	.12	.21	....	....	....	....
Total	.15	.24	....	....	....	....
Discharges:						
Enlisted men	.24	.14	....	.94	....	....
Typho-malarial fever.						
Admissions:						
Enlisted men	.18	.22	.32	....	....	....
Total	.17	.20	.32	....	....	....
Noneffectiveness:						
Enlisted men	.05	.06	.07	....	....	....
Total	.04	.06	.07	....	....	....
Deaths:						
Enlisted men	.04	.07	....	....	....	....
Total	.04	.06	....	....	....	....
Diarrhœal diseases.						
Admissions:						
Officers	65.68	63.69	66.67	66.67	125.00	142.86
Enlisted men	128.18	131.08	147.95	106.78	137.59	157.65
Total	124.29	124.71	147.17	106.57	137.48	157.40
Noneffectiveness:						
Officers	1.78	1.77	.73	.55	2.40	1.96
Enlisted men	1.63	1.49	1.92	1.96	2.10	2.69
Total	1.64	1.52	1.90	1.95	2.10	2.68
Discharges:						
Enlisted men	.33	.41	.30	....	....	....
Septic diseases.						
Admissions:						
Enlisted men	.09	.07	.32	....	....	....
Total	.08	.07	.32	....	....	....
Noneffectiveness:						
Enlisted men	.001	.001	.002	....	....	....
Total	.001	.001	.002	....	....	....
Venereal diseases.						
Admissions:						
Officers	8.04	7.79	....	66.67	....	....
Enlisted men	79.63	93.80	58.09	54.58	61.76	87.06
Total	75.22	85.66	57.58	54.63	61.23	85.65
Noneffectiveness:						
Officers	.33	.34	....	.73	....	....
Enlisted	5.16	6.23	3.87	3.52	3.56	4.66
Total	4.86	5.67	3.84	3.51	3.53	4.59
Discharges:						
Enlisted men	2.89	3.63	1.78	1.57	1.00	4.96

of disease to nativity and length of service.

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1.	1 and over.
1,800.00	166.67	....	1,000.00	....	....	200.00	31.25	177.40
141.28	107.30	82.47	171.05	183.49	148.93	148.59	185.60	179.75
147.25	108.78	81.63	174.67	183.49	144.83	144.30	184.31	179.57
73.97	4.57	....	19.18	....	....	1.10	5.65	6.38
3.37	2.75	1.75	3.34	2.81	3.67	2.77	3.95	3.54
3.68	2.80	1.73	3.41	2.81	3.56	2.75	3.97	3.74
....	....	....	....	....	....	....	....	.48
....	....	....	....	4.24	....	....	1.72	.68
....	....	....	....	4.24	....	....	1.69	.67
....	....	....	....	....	....	1,400.00	....	56.85
59.61	81.55	108.25	57.02	64.22	31.91	62.05	120.29	90.43
59.34	79.50	107.14	56.77	64.22	30.93	98.73	119.27	88.08
....	....	....	....	....	....	13.70	....	2.85
1.60	1.93	4.12	1.44	2.24	.38	3.43	3.99	2.55
1.60	1.88	4.08	1.44	2.24	.37	3.56	3.96	2.57
....	....	....	....	....	....	....	....	.48
....	....	....	....	....	....	....	....	.15
....	....	....	....	....	....	....	....	.18
....	....	....	4.07	....	....	....	.49	.20
....	....	....	....	....	....	....	....	.21
....	....	....	....	....	....	....	....	.20
....	....	....	....	....	....	....	....	.05
....	....	....	....	....	....	....	....	.05
....	....	....	....	....	....	....	....	.05
....	....	....	....	....	....	....	....	.04
....	333.33	....	....	....	333.33	....	....	67.12
105.97	111.59	77.82	100.88	114.68	53.19	76.92	150.82	123.63
105.49	117.15	76.53	100.44	114.68	61.86	78.95	149.55	119.59
....	13.24	....	....	....	5.48	....	....	1.82
1.44	1.48	.73	1.06	1.51	.76	.59	1.91	1.57
1.43	1.78	.73	1.05	1.51	.90	.58	1.89	1.59
2.04	....	....	....	....	....	....	.49	.29
....	....	....	....	....	....	....	....	.11
....	....	....	....	....	....	....	....	.10
....	....	....	....	....	....	....	....	.001
....	....	....	....	....	....	....	....	.001
....	....	....	....	....	....	....	....	8.22
57.40	68.67	25.77	57.02	77.98	127.66	46.15	162.24	63.24
57.15	66.90	25.51	56.77	77.98	123.71	45.57	160.86	59.30
....	....	....	....	....	....	....	....	.34
2.97	3.61	1.58	4.39	5.35	5.10	3.47	10.33	4.13
2.96	3.52	1.57	4.37	5.35	4.94	3.43	10.25	3 [illegible]
4.09	....	....	4.07	....	....	2.38	8.86	

TABLE XIX.—*Showing the relation of certain classes*

Orders of diseases, etc.	Total.	Nativities.				
		American U.S.	Irish.	German.	English.	Canadian.
Zoögenous diseases.						
Admissions:						
Enlisted men	35.88	42.31	31.45	12.54	23.84	47.06
Total	33.67	38.31	31.15	12.48	23.63	46.30
Noneffectiveness:						
Enlisted men	1.19	1.57	.83	.26	.39	1.33
Total	1.12	1.42	.82	.25	.39	1.31
Deaths:						
Enlisted men	.04	....	.30	....	....	....
Total	.04	....	.29	....	....	....
Dietic diseases.						
Admissions:						
Officers	5.36	5.66	....	....	....	....
Enlisted men	43.88	37.95	89, 54	27.46	62.84	30.59
Total	41.51	34.91	88.68	27.32	62.30	30.10
Noneffectiveness:						
Officers	.08	.08	....	....	....	....
Enlisted men	.53	.46	1.07	.34	.82	.34
Total	.50	.43	1.06	.34	.81	.34
Deaths:						
Enlisted men	.20	.21	.59	....	....	....
Total	.19	.18	.59	....	....	....
Discharges:						
Enlisted men	.49	.69	.30	....	1.00	....
Constitutional diseases.						
Admissions:						
Officers	90.48	87.06	300.00	....	125.00	....
Enlisted men	87.77	88.25	93.39	89.83	69.34	87.06
Total	87.94	88.14	96.36	89.87	69.81	85.65
Noneffectiveness:						
Officers	6.83	6.23	34.43	....	39.73	....
Enlisted men	4.33	4.37	4.61	4.57	2.47	3.97
Total	4.48	4.55	4.90	4.54	2.79	3.91
Deaths:						
Enlisted men	.37	.21	....	.63	1.00	....
Total	.34	.18	....	.62	.99	....
Discharges:						
Enlisted men	2.81	3.08	2.08	3.45	....	4.36
Developmental diseases.						
Admissions:						
Officers	.67	.71	....	....	....	....
Enlisted men	.48	.30	.96	.68	2.17	....
Total	.50	.33	.95	.67	2.15	....
Noneffectiveness:						
Officers	.42	.44	....	....	....	....
Enlisted men	.05	.02	.06	.25	.09	....
Total	.08	.06	.06	.25	.09	....
Discharges:						
Enlisted men	.77	.41	1.49	1.26	2.01	....
Parasitic diseases.						
Admissions:						
Enlisted men	3.65	3.85	1.93	5.42	2.17	....
Total	3.42	3.48	1.91	5.40	2.15	....
Noneffectiveness:						
Enlisted men	.09	.10	.10	.12	.04	....
Total	.09	.09	.10	.12	.04	....
Diseases of the nervous system.						
Admissions:						
Officers	75.07	72.89	100.00	200.00	....	....
Enlisted men	58.61	61.99	56.80	53.90	47.67	37.65
Total	59.63	63.02	57.22	54.64	47.26	37.04
Noneffectiveness:						
Officers	8.16	8.08	22.74	.73	....	5.09
Enlisted men	1.73	1.63	1.85	1.59	1.20	1.14
Total	2.13	2.23	2.05	1.58	1.19	1.20

of disease to nativity and length of service—Continued.

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1.	1 and over.
55.19	21.46	10.31	61.40	64.22	21.28	12.82	171.80	8.91
54.94	20.92	10.20	61.14	64.22	20.62	12.66	170.35	8.27
1.48	.75	.23	.83	1.61	.44	.35	6.12	.21
1.48	.73	.22	.83	1.61	.42	.35	6.07	.20
....	....	....	....	....	....	....	....	.05
....	....	....	....	....	....	....	....	.04
....	....	....	....	....	....	....	....	5.48
34.28	47.21	10.31	43.86	9.17	42.55	35.90	23.63	47.90
34.18	46.02	10.20	43.67	9.17	41.24	35.44	23.43	44.87
....	....	....	....	....	....	....	....	.09
.30	.43	.15	.43	.09	.50	.48	.38	.56
.30	.42	.15	.43	.09	.48	.48	.37	.53
....	....	....	....	....	....	....	....	.24
....	....	....	....	....	....	....	....	.22
....	....	....	....	....	....	....	1.23	.34
....	....	500.00	....	....	333.33	....	31.25	91.78
97.14	42.92	82.47	83.83	105.50	43.55	76.92	69.57	91.38
96.70	41.84	86.74	82.96	105.50	51.55	75.95	69.25	91.41
....	....	5.48	....	....	8.22	....	.95	6.96
7.14	.72	6.44	4.80	3.61	.96	2.15	3.55	4.48
7.11	.70	6.43	4.79	3.61	1.19	2.12	3.53	4.06
2.04	....	4.78	....	4.24	....	....	....	.44
2.04	....	4.74	....	4.24	....	....	....	.40
....	....	....	8.13	4.24	....	2.38	3.20	2.73
....	....	....	....	....	....	....	....	.68
....	....	....	....	....	....	....	.80	.42
....	....	....	....	....	....	....	.79	.44
....	....	....	....	....	....	....	....	.43
....	....	....	....	....	....	....	.07	.05
....	....	....	....	....	....	....	.07	.08
....	....	....	....	8.47	....	....	.74	.79
....	12.88	....	8.77	4.59	....	2.56	11.42	2.11
....	12.55	....	8.73	4.59	....	2.53	11.32	1.96
....	.21	....	.12	.11	....	.03	.27	.06
....	.21	....	.12	.11	....	.03	.27	.06
....	166.67	....	....	....	333.33	200.00	....	76.71
55.19	42.92	51.55	43.86	59.63	95.74	56.41	70.37	56.28
54.94	46.02	51.02	43.67	59.63	103.10	58.23	69.77	57.74
....	.91	....	....	....	.91	3.84	....	8.33
2.84	3.48	.93	.31	3.78	3.52	4.78	2.00	1.68
2.83	3.42	.92	.31	3.78	3.45	4.77	1.99	2.15

TABLE XIX.—*Showing the relation of certain classes*

Orders of diseases, etc.	Total.	Nativities.				
		American U. S.	Irish.	German.	English.	Canadian.
Diseases of the nervous system—Continued.						
Deaths:						
Officers	4.68	4.94	....	....	....	....
Enlisted men	.45	.21	.89	.31	....	4.36
Total	.79	.78	.88	.31	....	4.26
Discharges:						
Enlisted men	2.73	1.78	4.76	3.14	4.02	6.54
Diseases of the eye.						
Admissions:						
Officers	14.74	14.86	....	66.67	....	....
Enlisted men	17.02	16.50	17.97	17.29	19.50	16.47
Total	16.88	16.34	17.80	17.54	19.33	16.20
Noneffectiveness:						
Officers	2.56	2.67	....	3.10	....	....
Enlisted men	.60	.62	.69	.89	.73	.60
Total	.81	.82	.69	.90	.73	.59
Discharges:						
Enlisted men	1.59	1.10	2.08	2.51	4.02	4.36
Diseases of the ear.						
Admissions:						
Officers	2.35	2.83	33.33	....	....	....
Enlisted men	9.41	8.58	8.34	10.51	15.17	11.76
Total	9.04	8.04	8.58	10.45	15.04	11.57
Noneffectiveness:						
Officers	.11	.10	.55	....	....	....
Enlisted men	.43	.40	.22	.43	1.24	.27
Total	.42	.37	.22	.43	1.23	.26
Discharges:						
Enlisted men	.90	.89	.30	.63	3.01	....
Diseases of the nose.						
Admissions:						
Officers	1.34	1.42	....	....	....	....
Enlisted men	2.46	2.52	1.93	3.39	1.08	....
Total	2.39	2.41	1.91	3.37	1.07	....
Noneffectiveness:						
Officers	.46	.49	....	....	....	....
Enlisted men	.12	.13	.09	.14	.15	....
Total	.14	.16	.09	.14	.15	....
Discharges:						
Enlisted men	.16	.14	.30	.31	....	....
Diseases of the respiratory system.						
Admissions:						
Officers	125.34	118.90	266.67	466.67	125.00	285.71
Enlisted men	110.54	118.06	113.29	85.42	113.76	110.59
Total	111.45	118.14	114.75	87.85	113.86	113.42
Noneffectiveness:						
Officers	5.47	5.08	27.58	7.67	1.37	3.91
Enlisted men	3.20	3.26	3.62	2.78	2.42	2.91
Total	3.34	3.44	3.85	2.80	2.40	2.93
Deaths:						
Officers	.94	.99	....	....	....	....
Enlisted men	1.51	1.57	1.78	1.57	2.01	....
Total	1.46	1.50	1.76	1.56	1.98	....
Discharges:						
Enlisted men	2.44	2.46	2.08	2.51	1.00	6.54
Diseases of the circulatory system.						
Admissions:						
Officers	6.03	5.66	....	....	....	....
Enlisted men	8.88	7.92	11.23	11.86	8.67	11.76
Total	8.71	7.70	11.12	11.80	8.59	11.57
Noneffectiveness:						
Officers	1.76	1.79	....	....	....	....
Enlisted men	.67	.57	.96	.94	.46	.19
Total	.74	.68	.95	.95	.46	.19

of disease to nativity and length of service—Continued.

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1.	1 and over.
....	....	....	....	....	....	....	....	4.78
....	....	4.78	4.07	....	....	....	.25	.49
....	....	4.74	4.05	....	....	....	.24	.89
6.13	....	....	4.07	4.24	....	7.13	4.18	2.44
....	....	....	....	....	....	....	....	15.07
19.87	17.17	10.81	13.16	18.35	10.64	23.08	13.28	17.76
19.78	16.74	10.20	13.10	18.35	10.30	22.78	13.16	17.57
....	....	....	....	....	....	....	....	2.61
.44	.47	.95	.17	.61	2.51	1.71	.45	.78
.44	.46	.94	.17	.62	2.43	1.69	.44	.88
....	....	4.78	....	....	....	2.38	1.23	1.66
....	....	....	....	....	....	....	....	3.42
8.88	8.58	10.31	8.77	9.17	21.28	20.51	15.40	8.22
8.79	8.37	10.20	8.73	9.17	20.62	20.25	15.27	7.88
....	....	....	....	....	....	....	....	.11
.11	.46	.14	.71	.09	.29	2.25	.97	.33
.11	.45	.14	.71	.09	.28	2.22	.96	.31
....	....	....	....	....	....	7.13	1.97	.68
....	....	....	....	....	....	....	....	1.87
6.62	4.29	....	....	....	10.64	....	2.92	2.37
6.50	4.18	....	....	....	10.31	....	2.90	2.30
....	....	....	....	....	....	....	....	.46
.42	.14	....	....	....	.06	....	.15	.12
.42	.14	....	....	....	.05	....	.15	.14
....	....	....	....	....	....	....	....	.20
....	....	....	....	....	333.33	....	....	128.08
79.48	115.88	92.78	83.33	82.57	127.66	79.49	107.28	111.19
79.12	112.97	91.84	82.96	82.57	134.02	78.48	106.37	112.40
....	....	....	....	....	2.74	....	....	5.59
5.32	4.55	1.58	2.40	2.65	2.18	1.44	3.02	3.23
5.30	4.44	1.57	2.39	2.65	2.20	1.42	3.00	3.40
....	....	....	....	....	....	....	....	.96
....	....	....	....	4.24	....	....	.98	1.61
....	....	....	....	4.24	....	....	.97	1.55
6.13	7.94	....	....	....	....	....	2.46	2.44
....	....	....	....	....	....	200.00	....	6.16
2.21	17.17	5.15	13.16	4.59	10.64	2.56	9.56	8.75
2.20	16.74	5.10	13.10	4.59	10.31	5.06	9.48	8.56
....	....	....	....	....	....	20.27	....	1.80
.06	2.08	.78	2.02	.45	.29	.19	.66	.67
.05	1.97	.77	2.01	.45	.28	.44	.66	.7

TABLE XIX.—*Showing the relation of certain classes*

Orders of diseases.	Total.		Nativities.			
		American U.S.	Irish.	German.	English.	Canadian.
Deseases of the circulatory system—Continued.						
Deaths:						
Officers	1.40	1.48	......	......	......	......
Enlisted men	.41	.48	.89	......	......	......
Total	.49	.60	.88	......	......	......
Discharges:						
Enlisted men	2.28	1.99	2.97	3.14	3.01	......
Diseases of the digestive system.						
Admissions:						
Officers	151.47	153.57	100.00	133.33	......	142.86
Enlisted men	171.97	182.79	163.03	158.31	165.76	124.71
Total	170.70	180.03	162.42	158.19	164.82	125.00
Noneffectiveness:						
Officers	8.30	8.49	5.66	3.84	......	21.13
Enlisted men	3.02	3.07	3.23	3.02	3.02	2.02
Total	3.35	3.58	3.25	3.03	3.00	2.33
Deaths:						
Officers	1.87	1.98	......	......	......	......
Enlisted men	.24	.14	.89	.31	......	......
Total	.38	.36	.88	.31	......	......
Discharges:						
Enlisted men	2.36	1.78	2.97	2.83	3.01	4.36
Diseases of the lymphatic system.						
Admissions:						
Officers	2.68	2.83	......	......	......	......
Enlisted men	6.16	6.66	5.13	6.10	6.50	7.06
Total	5.94	6.30	5.09	6.07	6.46	6.94
Noneffectiveness:						
Officers	.08	.09	......	......	......	......
Enlisted men	.56	.66	.60	.39	.25	.41
Total	.53	.61	.59	.37	.24	.41
Discharges:						
Enlisted men	.04	.07	......	......	......	......
Diseases of the genito-urinary system.						
Admissions:						
Officers	22.12	21.94	33.33	66.67	......	......
Enlisted men	17.85	19.46	11.87	19.66	16.26	14.12
Total	18.11	19.69	12.08	19.90	16.11	12.89
Noneffectiveness:						
Officers	3.41	3.44	.91	12.78	......	......
Enlisted men	.98	.97	.61	1.03	.90	3.83
Total	1.13	1.21	.61	1.09	.89	3.77
Deaths:						
Officers	2.34	1.98	......	......	......	100.00
Enlisted men	.33	.41	......	.31	......	......
Total	.49	.60	......	.31	......	2.13
Discharges:						
Enlisted men	1.34	1.44	.89	1.57	1.00	2.18
Diseases of the locomotor system.						
Admissions:						
Officers	4.02	4.25	......	......	......	......
Enlisted men	4.31	4.07	1.93	6.44	6.50	2.35
Total	4.29	4.09	1.91	6.41	6.46	2.31
Noneffectiveness:						
Officers	.48	.51	......	......	......	......
Enlisted men	.41	.34	.11	.86	.49	.06
Total	.42	.36	.11	.85	.48	.06
Discharges:						
Enlisted men	.77	.55	1.18	1.26	3.01	......
Diseases of the integumentary system.						
Admissionsa:						
Officers	28.82	30.43	......	......	......	......
Enlisted men	79.32	86.92	65.15	74.58	66.01	80.06
Total	76.22	81.58	64.53	74.20	64.45	78.70

of disease to nativity and length of service—Continued.

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1.	1 and over.
....	....	....	....	....	....	....	....	1.43
....	....	....	....	....	....	....	.49	.39
....	....	....	....	....	....	....	.48	.49
....	....	4.78	8.13	4.24	....	....	2.71	2.20
....	....	....	....	....	666.67	200.00	31.25	154.11
145.71	111.59	154.64	162.28	128.44	191.49	188.46	215.88	163.26
145.05	108.78	153.05	161.57	128.44	206.20	189.23	214.88	162.60
....	....	....	....	....	3.65	.55	.51	8.47
2.10	1.03	4.85	2.29	1.75	3.76	3.54	3.59	2.91
2.10	1.01	4.81	2.27	1.75	3.76	3.52	3.57	3.31
....	....	....	....	....	....	....	....	1.91
....	....	....	....	....	....	....	.25	.25
....	....	....	....	....	....	....	.24	.30
2.05	....	9.57	....	4.24	9.91	7.13	3.44	2.15
....	....	....	....	....	....	....	....	2.74
2.21	8.58	....	4.39	....	10.64	5.13	7.70	5.85
2.20	8.37	....	4.37	....	10.31	5.06	7.63	5.63
....	....	....	....	....	....	....	....	.08
.02	.35	.31	.06	.74	.99	.18	.75	.52
.02	.34	.31	.06	.74	.96	.17	.75	.49
....	....	....	....	....	....	....	.25	....
....	....	....	....	....	....	....	....	22.68
15.45	12.88	20.62	13.16	22.94	10.64	10.26	31.33	15.11
15.38	12.56	20.41	13.10	22.94	10.31	10.18	31.07	15.71
....	....	....	....	....	....	....	....	3.48
1.20	1.00	1.29	.41	1.50	.47	.55	1.90	.98
1.20	.97	1.27	.41	1.50	.45	.55	1.88	.90
....	....	....	....	....	....	....	....	2.39
....	....	....	....	4.24	....	....	....	.39
....	....	....	....	4.24	....	....	....	.58
....	....	....	....	8.47	....	....	3.94	.83
....	....	....	....	....	....	....	....	4.20
6.62	12.88	5.15	13.16	....	....	2.56	5.58	4.06
6.59	12.55	5.10	13.10	....	....	2.53	5.53	4.06
....	....	....	....	....	....	....	....	.48
2.11	.96	.14	.22	....	....	.46	.54	.38
2.09	.94	.14	.22	....	....	.46	.54	.40
....	....	....	....	....	....	....	.74	.78
....	....	....	....	....	....	....	....	29.45
53.19	51.50	77.32	48.25	64.22	63.83	74.36	114.71	72.30
54.94	50.21	76.53	48.03	64.22	61.86	73.42	113.74	69.24

Table XIX.—*Showing the relation of certain classes*

Orders of diseases, etc.	Total.	Nativities.				
		American U. S.	Irish.	German.	English.	Canadian.
Diseases of the integumentary system—Continued.						
Noneffectiveness:						
Officers	1.28	1.30	2.47	....	....	....
Enlisted men	2.11	2.17	2.28	2.17	1.84	1.66
Total	2.07	2.09	2.28	2.16	[illegible].82	1.64
Deaths:						
Officers	.47	.49	....	....	[illegible]	....
Total	.04	.06	....	....	....	....
Discharges:						
Enlisted men	.20	.14	.30	....	1.00	....
Unclassified.						
Admissions:						
Officers	10.05	10.62	....	....	....	....
Enlisted men	17.59	18.72	15.40	15.59	10.83	25.88
Total	17.12	17.95	15.26	15.51	10.74	25.46
Noneffectiveness:						
Officers	.36	.38	....	....	....	....
Enlisted men	.41	.41	.36	.49	.15	.43
Total	.41	.41	.36	.49	.15	.42
Deaths:						
Enlisted men	.04	.07	....	....	....	....
Total	.04	.06	....	....	....	....
Discharges:						
Enlisted men	.12	.07	.30	.31	....	....
Total for diseases.						
Admissions:						
Officers	545.17	825.90	1,166.67	1,466.67	625.00	857.14
Enlisted men	1,159.92	1,223.78	1,170.73	1,017.63	1,093.17	1,087.06
Total	1,140.55	1,186.12	1,170.69	1,019.90	1,089.15	1,083.33
Noneffectiveness:						
Officers	51.04	50.54	98.72	37.08	47.95	39.14
Enlisted men	33.80	35.11	33.12	31.51	29.20	34.17
Total	34.86	36.58	33.75	31.54	29.37	34.25
Deaths:						
Officers	12.63	12.85	....	....	....	100.00
Enlisted men	4.60	4.32	7.14	4.08	3.01	4.36
Total	5.25	5.36	7.04	4.06	2.98	6.40
Discharges:						
Enlisted men	22.49	20.77	24.09	25.44	27.11	32.68
Total for injuries.						
Admissions:						
Officers	70.38	68.65	133.33	66.67	250.00	....
Enlisted men	255.08	264.83	278.88	217.63	237.27	268.24
Total	243.70	246.26	277.50	216.86	237.38	263.89
Noneffectiveness:						
Officers	4.35	3.97	14.43	16.44	21.92	....
Enlisted men	8.08	7.96	9.92	7.49	7.22	6.42
Total	7.85	7.59	9.98	7.55	7.84	6.31
Deaths:						
Officers	1.87	1.48	....	....	....	....
Enlisted men	3.58	3.43	3.27	4.08	5.02	2.18
Total	3.45	3.19	3.23	4.05	4.96	2.13
Discharges:						
Enlisted men	2.53	2.60	2.68	3.14	2.01	....
Total diseases and injuries.						
Admissions:						
Officers	915.55	894.55	1,300.00	1,533.34	875.00	857.14
Enlisted men	1,415.00	1,488.61	1,449.61	1,235.25	1,380.44	1,356.29
Total	1,384.25	1,432.38	1,448.19	1,236.76	1,326.53	1,347.22
Noneffectiveness:						
Officers	55.38	54.50	113.15	53.52	69.87	39.14
Enlisted men	41.88	43.07	43.05	39.00	36.42	40.60
Total	42.71	44.17	43.73	39.09	36.71	40.56
Deaths:						
Officers	14.50	14.33	....	....	....	100.00
Enlisted men	8.18	7.74	10.41	8.17	8.03	6.54
Total	8.69	8.55	10.27	8.10	7.94	8.53
Discharges:						
Enlisted men	25.01	23.37	26.76	28.58	29.12	32.68

of disease to nativity and length of service—Continued.

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All others.	Under 1.	1 and over.
....	....	....	....	....	....	....	....	1.31
1.45	1.14	2.20	.82	1.22	1.05	3.66	2.90	1.96
1.44	1.11	2.18	.81	1.22	1.02	3.61	2.88	1.91
....	....	....	....	....	....	....	....	.48
....	....	....	....	....	....	....	....	.04
....	....	....	....	4.24	....	....	.25	.20
....	....	....	....	....	....	....	....	10.27
17.66	12.88	15.46	13.16	9.17	21.28	28.21	29.74	15.18
17.58	12.55	15.30	13.10	9.17	20.62	27.85	29.49	14.83
....	....	....	....	....	....	....	....	.37
.48	.09	.13	.08	.06	3.58	.79	.77	.34
.48	.09	.13	.08	.06	3.47	.77	.77	.34
....	....	....	....	....	....	....	....	.05
....	....	....	....	....	....	....	....	.04
....	....	....	....	....	....	....	.25	.10
1,500.00	666.67	500.00	1,000.00	....	2,000.00	2,200.00	93.75	861.64
955.85	909.87	840.21	1,000.00	1,022.94	1,042.55	917.95	1,519.91	1,088.48
958.24	903.77	836.73	1,000.00	1,022.94	1,072.17	934.17	1,507.90	1,072.28
73.97	18.72	5.48	19.18	....	21.00	39.45	7.11	51.99
35.86	27.61	27.81	25.90	30.19	30.51	32.80	48.30	30.92
36.03	27.37	27.58	25.86	30.19	30.22	32.93	47.96	32.42
....	....	....	....	....	....	....	....	12.91
2.06	....	9.57	4.07	16.95	....	....	3.69	4.78
2.04	....	9.48	4.05	16.95	....	....	3.65	5.54
20.45	7.94	19.14	28.46	38.14	9.90	28.50	36.41	19.72
....	....	500.00	....	....	....	....	....	71.92
220.75	266.09	201.03	197.37	146.79	244.68	194.87	297.13	246.73
219.78	259.41	204.08	196.50	146.79	237.11	192.40	294.63	234.24
....	....	17.81	....	....	....	....	....	4.45
9.69	11.93	6.33	4.84	3.28	4.55	7.91	8.92	7.92
9.65	11.64	6.44	4.82	3.28	4.41	7.82	8.85	7.67
500.00	....	....	....	....	....	....	....	1.91
6.14	3.97	....	8.13	....	....	4.75	3.94	3.52
8.15	3.83	....	8.10	....	....	4.67	3.89	3.37
4.09	....	....	....	....	....	2.38	2.95	2.44
1,500.00	666.67	1,000.00	1,000.00	....	2,000.00	2,200.00	93.75	933.56
1,176.60	1,175.97	1,041.24	1,197.37	1,169.73	1,287.23	1,112.82	1,817.05	1,335.21
1,178.02	1,163.18	1,040.82	1,196.50	1,169.73	1,309.28	1,126.58	1,802.53	1,306.52
73.97	18.72	23.29	19.18	....	21.00	39.45	7.11	56.44
45.56	39.53	34.13	30.74	33.47	35.06	40.71	57.22	38.84
45.68	39.01	34.02	30.69	33.47	34.63	40.75	56.81	40.09
500.00	....	....	....	....	....	....	....	14.82
8.18	3.97	9.57	12.20	16.95	....	4.75	7.63	8.30
10.18	3.83	9.48	12.15	16.95	....	4.67	7.54	8.91
24.54	7.94	19.14	28.46	38.14	9.90	30.88	39.36	22.17

TABLE XX.—*Showing the relation of certain specifie*

Names of diseases, etc.	Total.	Arms of service							
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.	All other.
Cerebro-spinal fever.									
Admissions:									
Enlisted men	.04	.10	....	....	....	....	......	....	......
Total	.04	.10	....	....	....	....	......	....	......
Noneffectiveness:									
Enlisted men	.01	.02	....	....	....	....	......	....	......
Total	.01	.02	....	....	....	....	......	....	......
Dengue.									
Admissions:									
Officers	.67	....	....	....	....	12.66	......	....	......
Enlisted men	.26	.40	.31	....	....	....	......	....	......
Total	.29	.38	.30	....	....	1.98	......	....	......
Noneffectiveness:									
Officers	.01	....	....	....	....	.21	......	....	......
Enlisted men	.003	.005	.003	....	....	....	......	....	......
Total	.003	.004	.002	....	....	.08	......	....	......
Diphtheria.									
Admissions:									
Enlisted men	.22	.20	....	.41	2.58	....	1.41	....	......
Total	.21	.19	....	.38	2.29	....	1.19	....	......
Noneffectiveness:									
Enlisted men	.006	.005	....	.02	.04	....	.03	....	......
Total	.01	.005	....	.02	.04	....	.08	....	......
Deaths:									
Enlisted men	.04	....	....	....	2.34	....	......	....	......
Total	.04	....	....	....	2.06	....	......	....	......
Enteric fever.									
Admissions:									
Officers	4.69	3.85	10.03	5.00	....	12.66	......	....	......
Enlisted men	5.28	5.94	7.23	2.88	10.10	....	1.41	.67	1.98
Total	5.24	5.80	7.36	3.04	9.17	1.98	1.19	.67	1.73
Noneffectiveness:									
Officers	1.07	.61	3.08	.97	....	1.39	......	....	......
Enlisted men	.74	.80	1.14	.83	.92	....	.13	.18	.18
Total	.76	.79	1.23	.88	.84	.22	.11	.18	.17
Deaths:									
Enlisted men	.58	.47	.73	.38	....	....	......	....	1.83
Total	.49	.43	.69	.34	....	....	......	....	1.54
Influenza.									
Admissions:									
Officers	164.87	199.32	190.63	230.00	75.00	....	113.63	....	41.38
Enlisted men	168.14	159.38	227.94	162.90	239.79	228.00	127.29	63.97	24.75
Total	167.98	161.63	226.29	168.00	215.60	188.10	125.14	63.97	26.84
Noneffectiveness:									
Officers	4.85	4.58	6.81	9.40	1.64	.42	3.36	....	1.30
Enlisted men	2.55	2.44	3.02	2.65	6.17	4.26	2.03	1.37	.37
Total	2.60	2.56	3.16	3.16	5.76	3.66	2.24	1.37	.51
Deaths.									
Officers	.47	....	2.34	....	....	....	......	....	......
Enlisted men	.20	.09	.15	1.14	....	....	......	....	......
Total	.22	.09	.27	1.03	....	....	......	....	......
Measles.									
Admissions:									
Officers	1.34	....	6.69	....	....	....	......	....	......
Enlisted men	2.55	2.22	.47	3.70	....	....	1.41	15.49	......
Total	2.48	2.09	.75	3.42	....	....	1.19	15.49	......
Noneffectiveness:									
Officers	.30	....	1.50	....	....	....	......	....	......
Enlisted men	.11	.11	.01	.18	....	....	.06	.70	......
Total	.13	.10	.08	.12	....	....	.07	.70	......
Mumps.									
Admissions:									
Enlisted men	.92	.81	1.26	2.06	....	....	......	....	......
Total	.87	.76	1.20	1.90	....	....	......	....	......

diseases to arm of service and age of individual.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	.17	....	....	....	....	....	....	....	....
....	.17	....	....	....	....	....	....	....	....
....	.04	....	....	....	....	....	....	....	....
....	.04	....	....	....	....	....	....	....	....
....	....	....	4.20	....	....	....	....	....	....
....	.17	.26	.47	.47	....	....	....	....	....
....	.17	.27	.67	.42	....	....	....	....	....
....	....	....	.07	....	....	....	....	....	....
....	.001	.003	.01	.001	....	....	....	....	....
....	.001	.003	.01	.001	....	....	....	....	....
....	.34	.14	.24	....	.57	....	....	....	....
....	.33	.14	22	....	.51	....	....	....	....
....	.01	.01	.01	....	.01	....	....	....	....
....	.01	.01	.01	....	.01	....	....	....	....
....	....	....	....	....	.52	....	....	....	....
....	....	....	....	....	.46	....	....	....	....
....	33.90	8.40	8.40	....	....	5.08	....	....	....
11.11	10.61	4.40	3.08	3.26	1.13	....	....	15.15	....
11.11	10.84	4.53	3.36	2.95	1.03	.86	....	5.68	....
....	5.25	1.54	3.03	....	....	.49	....	....	....
1.45	1.45	.58	.41	.78	.17	....	....	.42	....
1.45	1.49	.62	.55	.71	.15	.17	....	.16	....
....	.78	.66	.44	....	....	....	....	13.80	....
....	.77	.63	.41	....	....	....	....	4.37	....
....	322.02	214.28	172.25	198.19	157.30	177.65	97.23	45.45	58.82
144.44	202.08	172.96	142.42	156.89	155.45	110.31	116.84	60.61	368.41
144.44	203.26	174.31	144.00	160.76	155.62	121.75	108.48	51.14	169.80
....	10.31	6.85	4.10	5.80	5.28	3.87	2.60	3.46	2.66
2.21	2.65	2.54	1.96	2.50	2.74	2.58	3.45	5.69	12.83
2.21	2.92	2.68	2.08	2.81	2.97	2.80	3.09	4.30	6.31
....	....	....	....	....	3.92	....	....	....	....
....	.16	.13	.22	....	.52	.96	....	....	....
....	.15	.13	.20	....	.93	.76	....	....	....
....	....	8.40	....	....	....	....	....	....	....
11.11	6.23	1.56	1.18	.93	....	....	....	....	....
11.11	6.17	1.78	1.12	.84	....	....	....	....	....
....	....	1.89	....	....	....	....	....	....	....
.58	.25	.07	.08	.05	....	....	....	....	....
.58	.25	.13	.08	.05	....	....	....	....	....
3.70	1.68	.71	.71	.47	.57	....	....	....	....
3.70	1.67	.69	.67	.42	.51	....	....	....	....

TABLE XX.—*Showing the relation of certain specified*

Names of diseases, etc.	Total.	Arms of service.							
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.	All other.
Mumps—Continued.									
Noneffectiveness:									
Enlisted men	.03	.02	.03	.11	....	....	......	....	......
Total	.03	.02	.03	.10	....	....	......	....	......
Quinsy.									
Admissions:									
Enlisted men	.26	.30	.47	....	....	....	......	....	......
Total	.25	.29	.45	....	....	....	......	....	......
Noneffectiveness:									
Enlisted men	.006	.01	.01	....	....	....	......	....	......
Total	.01	.01	.01	....	....	....	......	....	......
Scarlet fever.									
Admissions:									
Enlisted men	.26	.10	.47	.41	....	....	......	....	.92
Total	.25	.10	.45	.38	....	....	......	....	.87
Noneffectiveness:									
Enlisted men	.02	.01	.03	.05	....	....	......	....	.02
Total	.02	.01	.03	.04	....	....	......	....	.02
Small-pox.									
Admissions:									
Enlisted men	.04	.10	....	....	....	....	......	....	......
Total	.04	.10	....	....	....	....	......	....	......
Noneffectiveness:									
Enlisted men	.004	.01	....	....	....	....	......	....	......
Total	.004	.01	....	....	....	....	......	....	......
Whooping cough.									
Admissions:									
Enlisted men	.22	.30	.16	.41	....	....	......	....	......
Total	.21	.29	.15	.38	....	....	......	....	......
Noneffectiveness:									
Enlisted men	.01	.01	.01	.06	....	....	......	....	......
Total	.01	.01	.01	.05	....	....	......	....	......
Erysipelas.									
Admissions:									
Officers	2.01	5.03	....	....	....	....	......	....	......
Enlisted men	2.46	3.02	2.04	2.47	2.53	....	1.41	2.02	1.98
Total	2.43	3.14	1.95	2.28	2.29	....	1.19	2.02	1.73
Noneffectiveness:									
Officers	.11	.28	....	....	....	....	......	....	......
Enlisted men	.10	.12	.12	.08	.18	....	.04	.09	.03
Total	.11	.13	.12	.07	.16	....	.04	.09	.03
Deaths:									
Enlisted men	.08	.19	....	....	....	....	......	....	......
Total	.07	.17	....	....	....	....	......	....	......
Other specific febrile and acute infectious diseases.									
Admissions:									
Officers	.67	....	....	5.00	....	....	......	....	......
Enlisted men	.04	....	....	.41	....	....	......	....	......
Total	.08	....	....	.76	....	....	......	....	......
Noneffectiveness:									
Officers	.02	....	....	.15	....	....	......	....	......
Enlisted men	.001	....	....	.01	....	....	......	....	......
Total	.002	....	....	.01	....	....	......	....	......
Bronchitis.									
Admissions:									
Officers	80.43	105.53	93.65	100.00	25.00	12.66	45.46	....	6.90
Enlisted men	73.65	79.08	61.62	115.18	118.69	190.14	28.29	35.69	16.83
Total	74.07	80.57	63.06	114.03	110.09	162.38	30.99	35.69	15.54

diseases to arm of service and age of individual—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
.01	.05	.03	.01	.01	.02	....	....	....	....
.01	.05	.03	.01	.01	.02	....	....	....	....
....	.34	....	.47	.93	....	....	....	....	....
....	.33	....	.45	.84	....	....	....	....	....
....	.01	.001	.02	.01	....	....	....	....	....
....	.01	.001	.02	.01	....	....	....	....	....
....	.51	.43	....	....	....	....	....	....	....
....	.50	.41	....	....	....	....	....	....	....
....	.03	.04	....	....	....	....	....	....	....
....	.03	.04	....	....	....	....	....	....	....
....	.17	....	....	....	....	....	....	....	....
....	.17	....	....	....	....	....	....	....	....
....	.02	....	....	....	....	....	....	....	....
....	.02	....	....	....	....	....	....	....	....
....	.51	.28	....	....	....	....	....	....	....
....	.50	.27	....	....	....	....	....	....	....
....	.04	.01	....	....	....	....	....	....	....
....	.04	.01	....	....	....	....	....	....	....
....	....	....	....	....	....	....	18.89	....	....
....	2.02	2.27	1.89	2.79	5.09	4.16	8.44	....	....
....	2.00	2.19	1.79	2.53	4.62	3.45	7.89	....	....
....	....	....	....	....	....	....	.77	....	....
....	.05	.11	.11	.16	.20	.17	.08	....	....
....	.05	.10	.10	.14	.18	.14	.37	....	....
....	....	.13	....	....	.52	....	....	....	....
....	....	.13	....	....	.46	....	....	....	....
....	16.95	....	....	....	....	....	....	....	....
....	.17	....	....	....	....	....	....	....	....
....	.23	....	....	....	....	....	....	....	....
....	.51	....	....	....	....	....	....	....	....
....	.005	....	....	....	....	....	....	....	....
....	.01	....	....	....	....	....	....	....	....
....	101.69	71.43	79.83	54.55	95.51	86.29	92.59	81.82	88.25
29.63	77.97	73.30	70.73	65.18	78.01	74.92	92.78	136.36	105.26
29.63	78.21	73.24	71.22	64.14	79.61	76.86	92.70	102.27	94.33

TABLE XX.—*Showing the relation of certain specified*

Names of diseases, etc.	Total.	Arms of service.							
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.	All other.
Bronchitis—Continued.									
Noneffectiveness:									
Officers	2.54	2.47	2.68	3.50	1.71	.38	4.75	....	.49
Enlisted men	1.37	1.53	1.04	1.84	2.68	3.22	.99	1.01	.19
Total	1.44	1.59	1.11	1.97	2.60	2.78	1.59	1.01	.22
Discharges:									
Enlisted men	.24	.37	.15	....	....	....	1.31	....	....
Pulmonary Phthisis.									
Admissions:									
Officers	1.34	1.68	...	5.00	....	....	....	....	....
Enlisted men	3.39	3.42	3.62	4.94	2.53	7.04	....	2.02	.99
Total	3.26	3.33	3.45	4.94	2.29	5.94	....	2.02	.87
Noneffectiveness:									
Officers	.94	1.63	.28	.29	....	....	2.11	....	....
Enlisted men	.82	.80	.80	1.65	.38	1.60	....	.48	....
Total	.83	.85	.78	1.55	.33	1.35	.33	.48	....
Deaths:									
Officers	.94	2.34	....	....	....	....	....	....	....
Enlisted men	.69	.56	.78	1.52	....	....	....	.62	.92
Total	.71	.69	.69	1.37	....	....	....	.62	.77
Discharges:									
Enlisted men	1.71	1.49	1.60	3.81	4.67	....	....	1.28	.92
Pneumonia.									
Admissions:									
Officers	2.68	1.68	6.69	5.00	....	....	....	....	....
Enlisted men	4.04	3.73	4.40	4.11	10.10	....	2.83	6.06	1.98
Total	3.96	3.61	4.50	4.18	9.17	....	2.88	6.06	1.73
Noneffectiveness:									
Officers	.28	.10	.49	1.10	....	....	....	....	....
Enlisted men	.41	.30	.43	.53	3.51	.08	.22	.47	.13
Total	.41	.29	.43	.58	3.19	.07	.19	.47	.11
Deaths:									
Enlisted men	.57	.37	.73	....	....	....	1.31	1.25	1.83
Total	.52	.35	.69	....	....	....	1.05	1.25	1.54
Pleuritis.									
Admissions:									
Officers	.67	1.68	....	....	....	....	....	....	....
Enlisted men	2.81	2.62	4.09	2.06	10.10	2.85	1.41	....	.99
Total	2.63	2.57	3.90	1.90	9.17	1.98	1.19	....	.87
Noneffectiveness:									
Officers	.59	.65	....	2.36	....	....	....	....	....
Enlisted men	.16	.20	.14	.10	.45	.69	.03	....	.01
Total	.19	.23	.14	.27	.42	.58	.02	....	.01
Deaths:									
Enlisted men	.08	....	.29	....	....	....	....	....	....
Total	.07	....	.27	....	....	....	....	....	....
Discharges:									
Enlisted men	.12	.09	.15	....	....	2.17	....	....	....
Rheumatic fever.									
Admissions:									
Officers	2.68	3.35	....	10.00	....	....	....	....	....
Enlisted men	5.54	5.90	4.87	5.76	5.05	4.69	5.66	8.75	1.98
Total	5.36	5.70	4.65	6.08	4.58	3.96	4.77	8.75	1.73
Noneffectiveness:									
Officers	.48	.62	....	1.74	....	....	....	....	....
Enlisted men	.59	.65	.43	.73	.81	.67	.43	.97	.15
Total	.58	.65	.41	.80	.74	.56	.36	.97	.14
Deaths:									
Enlisted men	.005	....	....	.38	....	....	....	....	....
Total	.004	....	....	.34	....	....	....	....	....
Discharges:									
Enlisted men	12	.09	.15	.38	....	....	....	....	....

diseases to arm of service and age of individual—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	1.21	1.15	1.00	2.12	2.14	3.94	5.16	2.44	5.32
.28	1.25	1.35	1.12	1.90	1.62	.94	2.51	8.33	1.05
.28	1.25	1.34	1.11	1.92	1.66	1.69	3.65	4.64	3.72
....	....	.13	....	1.29	.52	....	3.18	....	....
....	....	....	4.20	....	5.62	....	....	....	....
....	4.55	2.84	3.31	3.72	2.83	1.04	....	30.30	....
....	4.50	2.74	3.36	3.38	3.08	.86	....	11.36	....
....	....	....	.60	....	7.05	....	....	....	....
....	.90	.59	.88	1.09	1.48	.09	....	5.10	....
....	.89	.57	.87	.99	1.99	.08	....	1.91	....
....	....	....	....	....	7.84	....	....	....	....
....	.78	.39	.22	1.29	1.57	.96	....	13.89	....
....	.77	.38	.20	1.14	2.31	.76	....	4.37	....
....	2.50	1.58	1.53	1.29	1.57	....	....	13.89	....
....	....	....	4.20	....	5.62	5.08	....	9.09	....
....	4.55	4.11	3.78	4.66	1.70	3.12	10.31	15.15	....
....	4.50	3.98	3.81	4.22	2.05	3.45	5.92	11.36	....
....	....	....	24	....	.29	.47	....	1.99	....
.13	.36	.46	.35	.67	.29	.27	.44	1.78	2.74
.13	.36	.44	.35	.61	.29	.30	.24	1.91	.98
....	.62	.26	.22	1.29	.52	.96	3.18	....	50.00
....	.62	.25	.20	1.14	.46	.76	1.61	....	14.71
....	....	....	....	....	....	5.08	....	....	....
....	1.52	2.13	4.26	4.18	3.39	6.24	3.44	....	....
....	1.50	2.06	4.03	3.80	3.08	6.04	1.97	....	....
....	....	1.98	....	....	....	1.97	....	....	....
....	.10	.16	.28	.12	.08	.33	.04	....	....
....	.10	.22	.26	.11	.08	.61	.02	....	....
....	....	.13	.22	....	....	....	....	....	....
....	....	.13	.20	....	....	....	....	....	....
....	.16	.26	....	....	....	....	....	....	....
....	....	....	4.20	....	5.62	5.08	....	9.09	....
3.70	5.39	4.82	4.02	6.98	7.91	10.41	6.87	15.15	....
3.70	5.33	4.66	4.03	6.33	7.70	9.49	3.94	11.36	....
....	....	....	.64	.07	1.15	.76	....	1.77	....
.31	.66	.53	.45	.53	.97	.70	1.08	.33	....
.31	.65	.51	.46	.49	.96	.71	.62	1.23	....
....	....	.13	....	....	....	....	....	....	....
....	....	.13	....	....	....	....	....	....	....
....	.16	.13	....	....	.52	....	....	....	....

TABLE XX.—*Showing the relation of certain specified*

Names of diseases, etc.	Total.	Arms of service.							
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.	All other.
Myalgia and muscular rheumatism.									
Admissions:									
Officers	55.63	80.40	50.17	65.00	25.00	12.66	22.73	....	13.79
Enlisted men	53.60	55.46	64.77	51.42	75.76	105.63	31.12	16.84	14.85
Total	53.73	56.85	64.11	52.45	71.10	91.09	29.80	16.83	14.72
Noneffectiveness:									
Officers	2.04	2.79	1.53	2.12	1.03	.07	.19	....	2.85
Enlisted men	1.83	2.03	1.89	2.13	2.79	2.31	1.86	.29	.40
Total	1.84	2.07	1.88	2.13	2.63	1.96	1.60	.29	.71
Discharges:									
Enlisted men	.98	.93	1.02	.76	4.67	2.17	....	1.25	....
Other rheumatism.									
Admissions:									
Officers	25.47	38.53	10.03	40.00	....	....	30.30	....	....
Enlisted men	24.01	26.76	26.10	20.98	32.83	35.21	21.22	12.12	4.95
Total	24.10	27.18	25.38	22.43	29.82	29.70	22.65	12.11	4.33
Noneffectiveness:									
Officers	2.78	3.07	4.48	3.51	....	....	2.08	....	....
Enlisted men	1.55	1.66	1.85	1.20	2.50	.75	.75	1.28	.40
Total	1.63	1.74	1.96	1.38	2.27	.63	.96	1.28	.35
Discharges:									
Enlisted men	1.14	1.31	.87	1.14	4.67	2.17	1.31	1.25	....
Total rheumatism.									
Admissions:									
Officers	83.78	122.28	60.20	115.00	25.00	12.66	58.03	....	13.79
Enlisted men	83.15	88.13	95.74	78.15	113.63	145.53	57.98	37.71	21.78
Total	83.19	89.23	94.14	80.96	105.50	124.75	57.22	37.69	20.78
Noneffectiveness									
Officers	5.30	6.47	6.06	7.37	1.03	.07	2.26	....	2.85
Enlisted men	3.97	4.33	4.17	4.05	6.10	3.73	3.04	2.54	.96
Total	4.05	4.46	4.25	4.31	5.64	3.16	2.92	2.54	1.20
Deaths:									
Enlisted men	.005	....	....	.38	....	....	....	....	....
Total	.004	....	....	.34	....	....	....	....	....
Discharges:									
Enlisted men	2.24	2.24	2.04	2.29	9.34	4.34	1.31	2.50	....

diseases to arm of service and age of individual—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	16.95	33.61	37.81	40.54	89.89	96.45	55.56	63.64	58.82
7.41	41.28	45.65	55.59	66.11	83.66	74.92	184.02	181.82	105.26
7.40	41.01	45.26	54.65	63.71	84.23	78.59	100.59	107.95	75.47
....	.51	.45	1.01	.70	2.75	3.23	4.13	1.87	8.30
.20	1.10	1.39	3.05	2.69	2.85	3.97	4.53	6.10	4.90
.20	1.09	1.37	2.00	2.51	2.84	3.84	4.36	3.46	7.08
....	.31	.26	.06	2.59	3.14	2.89	3.18	....	50.00
....	33.90	4.20	25.21	....	44.94	55.84	32.41	27.27	....
3.70	18.69	19.57	22.47	29.79	32.22	47.87	65.26	181.82	157.89
3.70	18.84	19.06	22.62	27.00	33.38	49.22	51.28	85.23	56.00
....	.42	.25	3.38	....	4.83	4.45	3.34	5.03	7.17
.02	1.18	1.55	1.34	1.69	2.53	1.77	1.85	18.01	4.47
.02	1.17	1.51	1.45	1.53	2.74	2.22	2.49	9.90	6.20
....	.78	1.44	.06	.86	1.57	.96	6.37	13.89	....
....	50.85	37.82	67.23	40.54	140.44	157.35	87.96	100.00	58.82
14.81	65.34	70.04	82.09	102.88	123.79	133.20	206.18	378.79	263.16
14.81	65.18	68.99	81.30	97.05	125.82	137.31	155.82	204.51	132.07
....	.93	.70	5.64	.78	8.74	8.44	7.47	8.67	15.47
.54	2.94	3.47	3.85	4.92	6.31	6.44	7.47	24.45	9.37
.54	2.92	3.38	3.91	4.53	6.54	6.78	7.47	14.59	13.28
....	....	.13	....	....	....	....	....	....	....
....	....	.13	....	....	....	....	....	....	....
....	1.25	1.84	1.31	3.45	5.23	3.86	9.55	13.89	50.00

TABLE XXI.—*Showing the relation of certain*

Names of diseases, etc.	Total.	Nativities.				
		American U. S.	Irish.	German.	English.	Canadian.
Cerebro-spinal fever.						
Admissions:						
Enlisted men	.04	....	....	....	1.08	....
Total	.04	....	....	....	1.07	....
Noneffectiveness:						
Enlisted men	.01	....	....	....	.25	....
Total	.01	....	....	....	.25	....
Dengue.						
Admissions:						
Officers	.67	.71	....	....	....	....
Enlisted men	.26	.30	.32	....	....	....
Total	.29	.33	.32	....	....	....
Noneffectiveness:						
Officers	.01	.01	....	....	....	....
Enlisted men	.003	.003	.002	....	....	....
Total	.003	.004	.002	....	....	....
Diphtheria.						
Admissions:						
Enlisted men	.22	.22	.32	.34	....	....
Total	.21	.20	.32	.34	....	....
Noneffectiveness:						
Enlisted men	.006	.01	.01	.004	....	....
Total	.01	.01	.01	.004	....	....
Deaths:						
Enlisted men	.04	....	.30	....	....	....
Total	.04	....	.29	....	....	....
Enteric fever.						
Admissions:						
Officers	4.69	4.95	....	....	....	....
Enlisted men	5.28	4.88	5.78	5.42	5.42	9.41
Total	5.24	4.89	5.72	5.40	5.37	9.26
Noneffectiveness:						
Officers	1.07	1.13	....	....	....	....
Enlisted men	.74	.74	.65	.75	.69	1.43
Total	.76	.77	.65	.74	.69	1.41
Deaths:						
Enlisted men	.53	.41	1.19	.63	....	....
Total	.49	.36	1.16	.62	....	....
Influenza.						
Admissions:						
Officers	164.87	161.86	133.33	266.67	250.00	285.70
Enlisted men	168.14	181.39	163.99	148.18	149.50	115.29
Total	167.93	179.50	163.70	148.72	150.37	118.05
Noneffectiveness:						
Officers	4.85	4.82	2.37	4.75	4.45	7.04
Enlisted men	2.55	2.64	2.85	2.20	2.49	2.25
Total	2.69	2.84	2.85	2.22	2.51	2.33
Deaths:						
Officers	.47	.49	....	....	....	....
Enlisted men	.20	.21	.30	.31	....	....
Total	.22	.24	.29	.31	....	....
Measles.						
Admissions:						
Officers	1.34	1.42	....	....	....	....
Enlisted men	2.55	3.99	.32	....	1.08	....
Total	2.48	3.75	.32	....	1.07	....
Noneffectiveness:						
Officers	.30	.32	....	....	....	....
Enlisted men	.11	.18	.01	....	.06	....
Total	.13	.19	.01	....	.06	....
Mumps.						
Admissions:						
Enlisted men	.92	1.26	.32	.34	....	2.35
Total	.87	1.14	.32	.34	....	2.31

specified diseases to nativity and length of service.

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1.	1 and over.
....	....	....	....	....	....	....	.27	....
....	....	....	....	....	....	....	.26	....
....	....	....	....	....	....	....	.06	....
....	....	....	....	....	....	....	.06	....
....	....	....	....	....	....	....	....	.68
....	....	....	....	....	10.64	....	.53	.21
....	....	....	....	....	10.31	....	.53	.24
....	....	....	....	....	....	....	....	.01
....	....	....	....	....	.12	....	.004	.003
....	....	....	....	....	.11	....	.004	.003
....	....	....	....	....	....	....	.27	.21
....	....	....	....	....	....	....	.26	.20
....	....	....	....	....	....	....	.003	.01
....	....	....	....	....	....	....	.003	.01
....	....	....	....	....	....	....	....	.05
....	....	....	....	....	....	....	....	.04
....	....	....	....	....	....	....	31.25	4.11
11.04	....	....	8.77	9.17	10.64	2.56	7.97	4.74
10.99	....	....	8.73	9.17	10.31	2.53	8.16	4.70
....	....	....	....	....	....	....	5.65	.97
1.45	.89	....	.76	.35	2.07	.33	1.06	.68
1.45	.87	....	.75	.35	2.01	.33	1.10	.70
....	....	....	....	4.24	....	....	1.23	.39
....	....	....	....	4.24	....	....	1.21	.35
500.00	166.67	....	1,000.00	....	....	200.00	....	168.49
125.82	103.01	77.32	162.28	169.72	127.65	141.03	163.03	169.15
131.87	104.60	76.53	165.93	169.72	123.72	141.77	161.64	169.10
73.97	4.57	....	19.18	....	....	1.10	....	4.96
1.82	1.82	1.36	2.58	2.32	1.49	2.44	2.28	2.60
2.14	1.89	1.34	2.66	2.32	1.44	2.43	2.26	2.77
....	....	....	....	....	....	....	....	.48
....	....	....	....	....	....	....	.25	.20
....	....	....	....	....	....	....	.24	.22
....	....	....	....	....	....	....	....	1.37
....	....	5.15	....	4.59	....	....	8.50	1.37
....	....	5.10	....	4.59	....	....	8.43	1.37
....	....	....	....	....	....	....	....	.31
....	....	.39	....	.14	....	....	.35	.07
....	....	.39	....	.14	....	....	.34	.08
2.21	....	....	....	....	....	....	1.86	.74
2.20	....	....	....	....	....	....	1.84	.69

TABLE XXI.—*Showing the relation of certain specified*

Names of diseases, etc.	Total.	Nativities.				
		American U.S.	Irish.	German.	English.	Canadian.
Mumps—Continued.						
Noneffectiveness:						
Enlisted men	.03	.04	.02	.01	....	.07
Total	.08	.03	.02	.01	....	.07
Quinsy.						
Admissions:						
Enlisted men	.26	.30	.32	....	1.08	....
Total	.25	.27	.32	....	1.07	....
Noneffectiveness:						
Enlisted men	.006	.01	.01	....	.01	....
Total	.01	.01	.01	....	.01	....
Scarlet fever.						
Admissions:						
Enlisted men	.26	.30	....	.34	1.07	....
Total	.25	.27	....	.34	1.07	....
Noneffectiveness.						
Enlisted men	.02	.02	.01	.01	.09	....
Total	.02	.02	.01	.01	.09	....
Small-pox.						
Admissions:						
Enlisted men	.04	.07	....	....	....	....
Total	.04	.07	....	....	....	....
Noneffectiveness:						
Enlisted men	.004	.01	....	....	....	....
Total	.004	.01	....	....	....	....
Whooping cough.						
Admissions:						
Enlisted men	.22	.22	.32	.34	....	....
Total	.21	.20	.32	.34	....	....
Noneffectiveness:						
Enlisted men	.01	.02	.03	.01	....	....
Total	.01	.02	.03	.01	....	....
Erysipelas.						
Admissions:						
Officers	2.01	2.12	....	....	....	....
Enlisted men	2.46	2.15	4.17	2.71	2.17	4.71
Total	2.43	2.14	4.13	2.70	2.15	4.63
Noneffectiveness:						
Officers	.11	.12	....	....	....	....
Enlisted men	.10	.11	.15	.07	.18	.05
Total	.11	.11	.15	.07	.18	.04
Deaths:						
Enlisted men	.08	.14	....	....	....	....
Total	.07	.12	....	....	....	....
Other specific febrile and acute infectious diseases.						
Admissions:						
Officers	.67	.71	....	....	....	....
Enlisted men	.04	.07	....	....	....	....
Total	.08	.13	....	....	....	....
Noneffectiveness:						
Officers	.02	.02	....	....	....	....
Enlisted men	.001	.002	....	....	....	....
Total	.002	.004	....	....	....	....
Bronchitis.						
Admissions:						
Officers	80.43	75.73	200.00	833.33	125.00	142.86
Enlisted men	73.65	77.07	82.16	55.93	78.01	72.94
Total	74.07	77.49	83.28	57.34	78.41	74.07
Noneffectiveness:						
Officers	2.54	2.17	19.36	6.57	1.38	1.96
Enlisted men	1.37	1.39	1.56	.86	1.33	1.72
Total	1.44	1.47	1.73	.89	1.33	1.72
Discharges:						
Enlisted men	.24	.27	....	31	....	....

diseases to nativity and length of service—Continued.

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1.	1 and over.
.05	....	....	....	....	....	....	.04	.03
.05	....	....	....	....	....	....	.04	.03
....	....	....	....	....	....	....	.27	.26
....	....	....	....	....	....	....	.26	.24
....	....	....	....	....	....	....	.002	.01
....	....	....	....	....	....	....	.002	.01
....	....	....	....	....	....	....	.27	.26
....	....	....	....	....	....	....	.26	.24
....	....	....	....	....	....	....	.01	.02
....	....	....	....	....	....	....	.01	.02
....	....	....	....	....	....	....	.27	....
....	....	....	....	....	....	....	.26	....
....	....	....	....	....	....	....	.03	....
....	....	....	....	....	....	....	.03	....
....	....	....	....	....	....	....	.27	.21
....	....	....	....	....	....	....	.26	.20
....	....	....	....	....	....	....	.02	.01
....	....	....	....	....	....	....	.02	.01
....	....	....	....	....	....	....	....	2. 5
2.21	4.29	....	....	....	....	....	1.86	2.58
2.20	4.18	....	....	....	....	....	1.84	2.54
....	....	....	....	....	....	....	....	.11
.05	.04	....	....	....	....	....	.08	.11
.05	.03	....	....	....	....	....	.08	.11
....	....	....	....	....	....	....	.25	.05
....	....	....	....	....	....	....	.24	.04
....	....	....	....	....	....	....	....	.08
....	....	....	....	....	....	....	.27	....
....	....	....	....	....	....	....	.26	.05
....	....	....	....	....	....	....	....	.02
....	....	....	....	....	....	....	.01	....
....	....	....	....	....	....	....	.01	.001
....	....	....	....	....	....	....	....	82.19
48.57	68.67	56.70	48.24	50.46	85.11	56.41	78.07	72.77
48.35	66.96	56.12	48.04	50.46	82.49	55.70	77.41	73.45
....	....	....	....	....	....	....	....	2.59
2.01	2.36	1.13	.75	2.06	1.38	1.15	1.43	1.35
1.99	2.29	1.15	.75	2.05	1.36	1.14	1.43	1.44
2.04	....	....	....	....	....	....	....	.29

TABLE XXI.—*Showing the relation of certain specifica*

Names of diseases, etc.	Total.	Nativities.				
		American U. S.	Irish.	German.	English.	Canadian.
Pulmonary phthisis.						
Admissions:						
Officers	1.34	1.42	....	....	....	....
Enlisted men	3.39	3.40	4.91	2.03	3.25	2.35
Total	3.26	3.21	4.77	2.02	3.22	2.31
Noneffectiveness:						
Officers	.94	.99	....	....	....	....
Enlisted men	.82	.76	1.36	.70	.45	.16
Total	.83	.78	1.35	.70	.45	.15
Deaths:						
Officers	.94	.99	....	....	....	....
Enlisted men	.69	.69	1.19	.31	2.01	....
Total	.71	.72	1.17	.31	1.98	....
Discharges:						
Enlisted men	1.71	1.71	2.08	1.26	1.00	4.36
Pneumonia.						
Admissions:						
Officers	2.68	2.83	....	....	....	....
Enlisted men	4.04	4.73	1.93	5.08	2.17	2.35
Total	3.96	4.55	1.91	5.06	2.15	2.31
Noneffectiveness:						
Officers	.28	.30	....	....	....	....
Enlisted men	.41	.49	.20	.51	.26	.16
Total	.41	.47	.20	.51	.26	.15
Deaths:						
Enlisted men	.57	.48	.59	1.26	....	....
Total	.52	.42	.59	1.25	....	....
Pleuritis.						
Admissions:						
Officers	.67	.71	....	....	....	....
Enlisted men	2.81	2.81	4.17	1.02	4.33	2.35
Total	2.68	2.61	4.13	1.01	4.30	2.31
Noneffectiveness:						
Officers	.59	.61	....	....	....	....
Enlisted men	.16	.15	.09	.16	.19	.69
Total	.19	.19	.09	.15	.19	.68
Deaths:						
Enlisted men	.08	.14	....	....	....	....
Total	.07	.13	....	....	....	....
Discharges:						
Enlisted men	.12	.07	....	.31	....	2.18
Rheumatic fever.						
Admissions:						
Officers	2.68	2.83	....	....	....	....
Enlisted men	5.54	6.14	3.56	5.42	4.33	4.71
Total	5.36	5.83	3.50	5.40	4.30	4.63
Noneffectiveness:						
Officers	.48	.51	....	....	....	....
Enlisted men	.59	.63	.49	.61	.43	.78
Total	.58	.61	.49	.61	.43	.77
Deaths:						
Enlisted men	.005	....	....	.31	....	....
Total	.004	....	....	.31	....	....
Discharges:						
Enlisted men	.12	.14	....	.31	....	....
Myalgia and muscular rheumatism.						
Admissions:						
Officers	55.63	54.49	133.33	....	....	....
Enlisted men	53.60	53.41	54.56	55.93	48.75	65.88
Total	53.73	53.51	55.30	55.65	48.34	64.82
Noneffectiveness:						
Officers	2.04	2.02	4.84	....	....	....
Enlisted men	1.83	1.80	2.09	2.07	1.08	1.72
Total	1.84	1.82	2.12	2.06	1.07	1.69
Discharges:						
Enlisted men	.98	1.03	.30	1.57	....	4.36

diseases to nativity and length of service—Continued.

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1.	1 and over.
....	....	....	....	....	....	....	....	1.37
8.83	4.29	....	....	....	10.64	....	3.98	3.27
8.79	4.18	....	....	....	10.31	....	3.95	3.13
....	....	....	....	....	....	....	....	.96
2.91	.52	....	....	....	.55	....	.65	.85
2.91	.50	....	....	....	.54	....	.64	.86
....	....	....	....	....	....	....	....	.95
....	....	....	....	....	....	....	.49	.78
....	....	....	....	....	....	....	.49	.76
4.09	3.97	....	....	....	....	....	1.97	1.66
....	....	....	....	....	....	....	....	2.74
....	8.58	....	....	9.17	....	....	4.25	4.00
....	8.87	....	....	9.17	....	....	4.21	3.91
....	....	....	....	....	....	....	....	.29
....	1.01	....	....	.48	....	....	.43	.41
....	.98	....	....	.48	....	....	.43	.40
....	....	....	....	4.24	....	....	.25	.63
....	....	....	....	4.24	....	....	.24	.58
....	....	....	....	....	....	....	....	.68
2.21	4.29	....	13.16	....	....	....	1.33	3.11
2.20	4.18	....	13.10	....	....	....	1.32	2.94
....	....	....	....	....	....	....	....	.59
.21	.07	....	1.42	....	....	....	.11	.17
.21	.07	....	1.41	....	....	....	.10	.20
....	....	....	....	....	....	....	.25	.05
....	....	....	....	....	....	....	.24	.04
....	....	....	....	....	....	....	.25	.10
....	....	....	....	....	....	....	....	2.74
8.83	4.29	5.15	....	9.17	....	5.13	7.70	5.11
8.79	4.18	5.10	....	9.17	....	5.06	7.64	4.94
....	....	....	....	....	....	....	....	.49
1.08	.14	.18	....	1.12	....	.21	.91	.53
1.08	.14	.18	....	1.12	....	.21	.91	.52
....	....	....	....	....	....	....	....	.005
....	....	....	....	....	....	....	....	.004
....	....	....	....	....	....	....	.25	.10
....	....	500.00	....	....	333.33	....	31.25	56.16
48.57	26.75	30.93	52.63	77.98	42.55	56.43	37.44	56.81
48.35	25.10	35.71	52.40	77.96	51.55	55.70	37.39	56.76
....	....	5.48	....	....	8.22	....	.94	2.06
2.81	.31	1.84	.80	1.60	.96	1.36	1.05	1.98
2.80	.30	1.87	.80	1.60	1.19	1.34	1.04	1.99
....	....	....	....	4.24	....	....	.49	1.07

TABLE XXI.—*Showing the relation of certain specified*

Names of diseases, etc.	Total.	Nativities.				
		American U. S.	Irish.	German.	English.	Canadian.
Other rheumatism.						
Admissions:						
Officers	25.47	22.65	166.67	....	125.00	....
Enlisted men	24.01	23.89	30.49	25.42	18.00	16.47
Total	24.10	23.77	31.79	25.30	13.94	16.20
Noneffectiveness:						
Officers	2.78	2.08	29.60	....	39.78	....
Enlisted men	1.55	1.61	1.60	1.57	.74	1.33
Total	1.63	1.66	1.86	1.56	1.08	1.31
Discharges:						
Enlisted men	1.14	1.30	1.19	.94	....	....
Total rheumatism.						
Admissions:						
Officers	83.78	79.97	300.00	....	125.00	....
Enlisted men	83.15	83.44	88.57	86.77	66.09	87.06
Total	83.19	83.11	90.59	86.34	66.59	85.65
Noneffectiveness:						
Officers	5.30	4.61	34.43	....	39.78	....
Enlisted men	3.97	4.04	4.18	4.26	2.26	3.83
Total	4.05	4.10	4.47	4.23	2.58	3.77
Deaths:						
Enlisted men	.005	....	....	.31	....	....
Total	.004	....	....	.31	....	....
Discharges:						
Enlisted men	2.24	2.47	1.49	2.83	....	4.36

diseases to nativity and length of service—Continued.

Nativities.							Length of service, years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1.	1 and over.
....	....	....	....	....	....	....	....	26.0 3
24.28	12.88	30.93	30.70	18.35	....	7.69	16.99	25.40
24.18	12.56	30.61	30.57	18.35	....	7.56	16.85	25.45
....	....	....	....	....	....	....	....	2.84
1.90	.27	2.85	4.00	.55	....	.20	.96	1.67
1.89	.26	2.82	3.98	.55	....	.19	.95	1.73
....	....	....	8.13	....	....	....	.74	1.22
....	....	500.00	....	....	333.33	....	31.25	84.94
81.68	42.92	67.01	83.33	105.50	42.55	69.23	62.13	87.32
81.32	41.84	71.43	82.97	105.50	51.65	68.36	61.87	87.15
....	....	5.48	....	....	8.22	....	.94	5.39
5.79	.72	4.87	4.81	3.27	.96	1.76	2.92	4.18
5.77	.70	4.88	4.79	3.27	1.19	1.74	2.90	4.26
....	....	....	....	....	....	....	....	.005
....	....	....	....	....	....	....	....	.004
....	....	....	8.13	4.24	....	....	1.43	2.39

TABLE XXII.—*Showing the causes and ratios of rejections among* 19,926 *recruits examined during the year* 1890 (*white,* 18,437; *colored,* 1489).

Causes of rejection.	White.				Colored.				White and colored.			
	Rejected on primary examination.	Rejected on secondary examination.	Total.	Ratios per 1,000.	Rejected on primary examination.	Rejected on secondary examination.	Total.	Ratios per 1,000.	Rejected on primary examination.	Rejected on secondary examination.	Total.	Ratios per 1,000.
Malarial diseases	7	3	10	0.5	.....	1	1	0.7	7	4	11	0.6
Enthetic diseases	311	15	326	17.7	50	1	51	34.2	361	16	377	18.9
Dietic diseases	629	3	632	34.3	6	.....	6	4.0	635	3	638	32.0
Constitutional diseases	24	3	27	1.5	2	1	3	2.0	26	4	30	1.5
Developmental diseases	894	9	903	49.0	107	.....	107	71.9	1,001	9	1,010	50.7
Parasitic diseases	18	.....	18	1.0	.....	.....	.....	.....	18	.....	18	.9
Nervous diseases	36	4	40	2.2	15	.....	15	10.1	51	4	55	2.8
Diseases of the eye	1,636	6	1,642	89.1	82	.....	82	55.1	1,718	6	1,724	86.5
Diseases of the ear	183	5	188	10.2	5	.....	5	3.4	188	5	193	9.7
Diseases of the nose	6	6	12	0.7	.....	.....	.....	.....	6	6	12	0.6
Respiratory diseases	43	4	47	2.5	1	....	1	0.7	44	4	48	2.4
Diseases of the circulatory system	605	14	619	33.6	16	.....	16	10.7	621	14	635	31.9
Diseases of the digestive system	927	17	944	51.2	67	.....	67	45.0	994	17	1,011	50.7
Diseases of the lymphatic system	25	....	25	1.4	14	.....	14	9.4	39	.....	39	2.0
Diseases of the genito urinary system	690	21	711	38.6	81	.....	31	20.8	721	21	742	37.2
Diseases of the locomotor system	626	5	631	34.2	36	.....	36	24.2	662	5	667	33.5
Diseases of the integumentary system	160	6	166	9.0	8	.....	8	5.4	168	6	174	8.7
Results of injuries	146	4	150	8.1	14	1	15	10.1	160	5	165	8.3
Over age	193	.....	193	10.5	11	.....	11	7.4	204	.....	204	10.2
Under age	621	.....	621	33.7	87	.....	87	58.4	708	....	708	35.5
Over height	68	.....	68	3.7	13	.....	13	8.7	81	.....	81	4.1
Under height	328	....	328	17.8	44	.....	44	29.6	372	....	372	18.7
Over weight	87	.....	87	4.7	10	.....	10	6.7	97	.....	97	4.9
Under weight	524	.....	524	28.4	30	....	30	20.1	554		554	27.8
Under size	204	.....	204	11.1	8	.....	8	5.4	212	.....	212	10.6
Obesity	4	....	4	0.2	.....	.....	.....	.....	4	....	4	0.2
Illiterate	5	....	5	0.3	1	....	1	0.7	6	.....	6	0.3
Imperfect knowledge of English	335	.....	335	18.2	2	.....	2	1.3	337	.....	337	16.9
Moral depravity	125	....	125	6.8	22	....	22	14.8	147	.....	147	7.4
Character bad and doubtful	116	....	116	6.3	18	.....	18	12.1	134	.....	134	6.7
Deserters and ex-convicts	23	.....	23	1.2	3	.....	3	2.0	26	.....	26	1.3
Discharged for disability and by order	8	9	17	0.9	....	1	1	0.7	8	10	18	0.9
Married, or having dependent relatives	237	....	237	12.9	47	....	47	31.6	284		284	14.3
Declined	165	.....	165	8.9	13	.....	13	8.7	178	.....	178	8.9
General unfitness and unclassified	2,034	2	2,036	110.4	188	....	188	126.3	2,222	2	2,224	111.6
Aggregate	12,043	136	12,179	660.6	951	5	956	642.0	12,994	141	13,135	659.2

O

Hon. Leland Stanford U. S.

REPORT

OF THE

SURGEON-GENERAL OF THE ARMY

TO THE

SECRETARY OF WAR

FOR THE

FISCAL YEAR ENDING JUNE 30, 1892.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1892.

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REPORT

OF

THE SURGEON-GENERAL.

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
Washington, D. C., September 30, 1892.

SIR: I have the honor to submit a statement of disbursements during the fiscal year ended June 30, 1892, from the appropriations made by act of Congress for the expenses of the Medical Department of the Army and for other purposes as stated below:

Medical and hospital department, 1892:		
Appropriated by act approved February 24, 1891		$200,000.00
Refunded during the year		181.01
Total to be accounted for		200,181.01
Disbursed during the year:		
For medical and hospital supplies	$70,289.42	
Expenses for purveying depots	181.75	
Pay of employés	43,315.74	
For medical attendance and medicines	8,072.98	
For advertising	233.07	
For miscellaneous expenses	904.51	
		122,997.47
Balance on hand June 30, 1892		77,183.54

The whole of this balance remaining on hand at the close of the fiscal year has already been or will be expended in payment for supplies contracted for and for other obligations incurred prior to July 1, 1892.

The approximate money value of the medical and hospital supplies actually issued during the fiscal year ended June 30, 1892, was $141,000.

Medical and hospital department, 1891:		
Balance on hand July 1, 1891		$95,958.84
Refunded during the year		613.99
Total to be accounted for		96,572.83
Disbursed during the year:		
For medical and hospital supplies	$55,312.11	
For expenses of purveying depots	2.85	
For pay of employés	200.00	
For medical attendance and medicines	1,998.70	
For advertising	116.40	
For miscellaneous expenses	219.86	
		57,849.92
Balance on hand June 30, 1892		38,722.

Medical and Hospital Department, 1890:		
Balance on hand July 1, 1891		$17,844.35
Disbursed during the year:		
For medical and hospital supplies	$127.00	
For medical attendance and medicines	66.50	
		193.50
Carried to surplus fund		17,650.85
Library of the Surgeon-General's Office, 1891:		
Balance from previous fiscal year		1,541.08
Disbursed during the year		1,541.08
Library of the Surgeon-General's Office, 1892:		
Appropriated by act of February 24, 1891		10,000.00
Disbursed during the year		7,725.76
Balance June 30, 1892		2,274.24
Army Medical Museum, 1891:		
Balance from previous fiscal year		854.83
Disbursed during the year		850.68
Balance, June 30, 1892		4.15
Army Medical Museum, 1892:		
Appropriated by act of February 24, 1891		5,000.00
Disbursed during the year		3,949.86
Balance, June 30, 1892		1,050.14
Building for Army Medical Museum:		
Balance from previous fiscal year		1,184.05
Balance, June 30, 1892		1,184.05
Artificial limbs, 1889 and prior years:		
Balance from previous fiscal year		4,160.87
Transfer warrant, act of March 3, 1875		2.20
Total to be accounted for		4,163.07
Disbursed during the year		2.20
Carried to the surplus fund		4,160.87
		4,163.07
Artificial limbs, 1890:		
Balance from previous fiscal year		1,416.56
Disbursed during the year	$250.00	
Carried to the surplus fund	347.76	
		597.76
Balance, June 30, 1892		818.80
Artificial limbs, 1891:		
Balance from previous fiscal year		16,432.12
Disbursed during the year		13,088.39
Balance, June 30, 1892		3,343.73
Artificial limbs, 1892:		
Appropriated by act of March 3, 1891		125,000.00
Appropriated by act of May 13, 1892		241,650.00
Total to be accounted for		366,650.00
Disbursed during the year		285,472.61
Balance, June 30, 1892		81,177.39

Appliances for disabled soldiers, 1890:	
Balance from previous fiscal year	$522.81
Balance, June 30, 1892	522.81
Appliances for disabled soldiers, 1891:	
Balance from previous fiscal year	129.51
Disbursed during the year	70.90
Balance, June 30, 1892	58.61
Appliances for disabled soldiers, 1892:	
Appropriated by act of March 3, 1891	2,000.00
Disbursed during the year	1,904.10
Balance June 30, 1892	95.90
Expended in furnishing trusses to disabled soldiers under the Revised Statutes, sections 1176 to 1178, and act of March 3, 1879	11,111.10
Support and medical treatment of destitute patients in the city of Washington:	
Appropriated by act of March 3, 1891	19,000,00
Expended during the year	19,000.00

There were furnished to disabled soldiers, seamen, and marines during the year ending June 30, 1892:

Trusses	537
Special appliances	195
Artificial legs, furnished in kind	53
Artificial feet, furnished in kind	2
Artificial arms, furnished in kind	2
Limbs and apparatus commuted	6.385

The new Standard Supply Table of the Medical Department is completed and will shortly be published. It is more than a revision of the present one, issued nine years ago, and is believed to provide in a satisfactory and liberal manner for the necessities of the service. Many new articles of medicines, instruments, and miscellaneous supplies have been added to it, and many old and more or less obsolete and useless ones have been dropped. Full directions are given in the introductory part concerning the care of property and the papers required to insure proper accountability, etc.

Particular attention has been given to a new field equipment, most parts of which have been issued to many of the larger posts. As comprised in this may be mentioned an ambulance, a contract for the manufacture of 100 of which has been awarded by the Quartermaster-General; litters; folding field furniture, issued on the basis of a ten-bed field hospital; medical, surgical, food, mess, and other chests for similar use; pouches containing medicines and surgical dressings necessary for first aid to the sick and wounded; a surgeon's field case; a special pack saddle for carrying the medical and surgical chests when wagon transporation is not available, and many minor articles. Illustrations, with brief descriptions of the more important of these, are appended to this report. It is believed that this equipment marks decided progress, and that in this respect our Medical Department is now equal to, if not in advance of, the medical service of any other army.

When thorough trial has been made of these articles reports will be called for from the medical officers who have used them with a view to such improvements of detail as may be advisable before furnishing them generally. A reserve will be kept on hand at the three medical supply depots for such emergencies as may arise.

Attention is particularly invited to the compactness of the new supplies and equipment, full advantage having been taken of the recent advances of pharmacy and aseptic surgery as to the former, and of the suggestions of medical officers and manufacturers as to the latter.

Much consideration has been given to the selection of the design for a litter, and credit is especially due to Maj. J. Van R. Hoff, Medical Department, Capt. George T. Beall, medical storekeeper, and Mr. P. R. Wagner, chief clerk medical supply depot, St. Louis, for working out the details and suggesting improvements. The litters now in use can, at slight expense, be modified to correspond to the new designs, and the necessary parts have been ordered and will soon be delivered and distributed.

Upon the recommendation of this office a clause was inserted in the act making appropriations for the support of the Army for the fiscal year 1893, by which advertisement before purchase of medicines and medical supplies is not required, thus giving the Medical Department of the Army the same advantage in procuring its supplies as has long been the case in the Bureau of Medicine and Surgery in the Navy. This will be of much practical value, particularly in obviating the delay which, in the past, has often involved the Department in considerable expense owing to a rise in the market price of articles between the time of first advertising and the opening of bids, which were, in many such cases, canceled by the bidders. The Department in making its purchases will now be enabled to take advantage of all reductions in current prices.

The chemical examination of medical supplies in this office fully protects the Government from the acceptance of articles that are not of the best quality.

During the year a thorough examination of all medical property in use at posts has been made with the view of returning to the supply depots all surplus property, and of condemning such as was found to be obsolete and useless. To secure expert action and carry out the views of this office uniformly, lists of all surplus property and of such as was considered obsolete by the post surgeon were called for from each post; these were examined in this office and my views as to the proper distribution of the different articles were indicated. At my request a letter was then addressed to each department commander directing that articles of medical and hospital property believed to be unsuitable for service should, before being submitted to an inspector for condemnation, be inspected by the medical director of the department, or by a medical officer designated by the Secretary of War, who should report to the Surgeon-General through military channels his recommendation as to their continuance in service, shipment, sale, or their inspection with a view to condemnation. A special letter of instruction was then sent to all medical directors transmitting to them the lists of unserviceable property received from the posts in their respective departments and giving detailed instructions for their guidance in regard to making the desired inspections of property.

Reports of these inspections have been received from most of the posts, and it can be confidently asserted that never before has such a judicious and thorough examination of the property of the Medical Department been made. Medical directors, knowing the views and policy of this office, have been enabled by their expert knowledge not only to eliminate a large amount of wholly useless and obsolete property, but to retain much that otherwise would have been condemned and destroyed. Of the articles retained many were susceptible of modification in accordance with the designs of the new field equipment, while others were returned to depot for repair and reissue or for retention in stock as a supply available for the emergencies of war in the case of such articles as do not deteriorate from age. Among other benefits a large money saving has already resulted from this system of inspection, which can not be too strongly commended as being greatly to the interest of the Government and of the Medical Department.

ARTIFICIAL LIMBS.

The money appropriated by Congress for artificial limbs, 1891-'92, $125,000, was estimated for and appropriated at a time when the benefit under the law recurred to the individual every five years. An amendment, approved March 3, 1891, changed the time of recurrence from five to three years, but no appropriation was made to meet the increased expenditure involved in the change. The immediate effect of the amendment was to perfect, on March 3, 1891, the claims that otherwise would have been scattered at maturity over the period to March 3, 1893. The balance of the appropriation for 1890-'91 on hand March 3, 1891, with the appropriation for the year 1891-'92, was unable to meet these claims, and an estimate for a deficiency appropriation of $241,650 on account of 4,728 claims which matured before June 30, 1892, was transmitted to Congress.

During the time that the disbursing business of the office was at a standstill for want of funds the records were carefully examined and many points of interest were noted, some of which are here presented.

From June 17, 1870, to January 15, 1892, the names of 21,102 persons were placed on the approved files of the office, while 4,818 applications were rejected after a full examination of each case.

Of the 21,102 persons, 10,187 filed claims for amputation and 10,915 for loss of the use of limbs. Of the former 5,053 had lost the upper and 5,134 the lower extremity; of the latter the use of the arm was lost in 6,391, of the leg in 4,524. Amputations thus constituted 48.28 and disabled but not amputated limbs 51.73 per cent of the total. The upper extremity was lost in 23.95 per cent, the lower in 24.33; the use of the arm in 30.29 and the use of the leg in 21.44.

Nearly the whole of the 10,187 cases of amputation came upon the rolls in 1870-'71, after the passage of the acts of June 17 and 30, 1870, granting an artificial limb or its commuted value once every five years to all soldiers who had lost a limb during the war for the supression of the rebellion, and extending the benefits thus provided to all officers, seamen, and marines disabled by loss of limb in the military or naval service of the United States.

When the act of June 8, 1872, extended the benefit to those who had sustained bodily injuries depriving them of the *use* of their limbs the number on the commutation rolls became largely increased. In 1872-'73 1,195 applications were approved, and thereafter the annual additions to the files averaged about 330, except that during the years 1883-'86, inclusive, 3,845 cases were allowed, and during 1889-'90 2,085 cases.

The unusual activity in the filing of claims during the first of these exceptional periods was due to the energy with which claim agents advertised their business among those who were known to be in receipt of pension on account of disability of the limbs. The second exceptional period was caused by the efforts of this office to free the pensioners from the toils of these agents. Not content with 10 per cent of the commutation granted on the original application, they endeavored to make it appear that their services were of value in securing the recurring payments, so that they might claim from the disabled soldiers

10 per cent of the moneys paid under the operation of the laws relating to artificial limbs. The Surgeon-General thereupon gave wide publicity to the fact that the services of attorneys were unnecessary in applications for artificial limbs or their commutation, either original or recurring, and the measures he adopted for disseminating this information immediately suppressed the business of the claim agents and at the same time brought their rights under the law to the knowledge of many pensioners who might otherwise have remained ignorant of them. It is believed that since May, 1889, no part of the money received by pensioners has been paid to agents for their assumed valuable assistance. The pensioners in all cases communicate directly with this office.

The accession of new names to the rolls is due now, not to the provisions of law becoming known to pensioners who were heretofore ignorant of them, but to the increase of disability with advancing age. Rheumatism, varicose veins, atrophy, and contraction of muscles, which are prominent causes of disability of the limbs, become aggravated with the advance of time; locomotor ataxia, paralysis, and other diseases of the nervous system implicating the movements of the limbs are also progressive, so that many sufferers from these diseases who had comparatively good use of their limbs in 1870 are now completely disabled.

Among the number of pensioners stated above as having lost an arm are some who had lost more than one member; thus 37 had lost both arms and 19 an arm *and* a leg; and among those recorded as having lost a leg are included those who had lost parts of other limbs or the use of other limbs; thus 49 had lost both legs, 25 both feet, 8 a leg *and* a foot, and 8 a leg, the other leg being wholly disabled, etc.

Of the 21,102 persons whose claims were approved during the period covered by the statistics the names of 16,322 remained on the list of beneficiaries on January 31, 1892. In 7,412 of these the limb was lost—the arm in 3,617, the leg in 3,795; in 8,910 the use of the limb was lost—the arm in 5,191, the leg in 3,719. There were, therefore, dropped from the rolls 4,780 cases during the period stated, 2,775 amputations—1,436 of the arm, 1,339 of the leg; and 2,005 cases of lost use—1,200 of the arm, 805 of the leg.

Death closed 3,954 of these cases, 515 were dropped as probably dead, every effort of this office having failed to discover them, while 311 cases were rejected on second or subsequent applications for commutation in view of later information concerning the condition of the individual. Hence, assuming as dead the 515 dropped on account of the inability of the office to find them, the total number of deaths among the 21,102 persons whose claims were approved would amount to 4,469.

These deaths occurred during the twenty years following the passage of the artificial-limb laws. The statistics given above report the conditions as known at this office on January 12, 1892; but deaths among those whose names are borne on the rolls do not usually become known until after the date when the next installment of commutation would have become payable. The pensioner fails to communicate with the office at that time, and inquiry concerning him develops the fact of his death. Of the 16,322 on the rolls on January 31, 1892, probably about 400 would have failed to respond to a roll call on that day, having died between that date and the time of their last payment.

During the five years intervening between the first and second payments 1,979 of the 21,102 died; during the second quinquennial period, 942; during the third, 834; during the fourth, 696, and the fifth installment now in progress has developed so far the occurrence of 18 deaths.

The absolute number of deaths, 4,469, represents 21.18 per cent of the total number of cases. Of the amputated cases 2,756 died, or 27.14 per cent of their own number, and of the cases of disabled but not amputated limbs 1,704, or 15.61 per cent of their own number.

It does not follow from these statements that the mortality was greater among those who lost limbs than among those who lost the use of their limbs, for the data relating to the two classes are not parallel. The amputated cases came on the rolls in 1870–'71, and have been under observation for twenty years, while, from the gradual manner in which claims for disabled limbs were filed, many of these cases have been under observation for but a few years. In fact, the whole number on the commutation list is equivalent to only 5,320 persons under observation for twenty years; and as 1,704 deaths were recorded among them the mortality rate for the period would be 32.03 per cent, as compared with 27.14 among the cases of amputation. The known death rates in a few detachments of these men corroborate the general rate as given by calculation. Thus, of the 1,195 cases that came on the rolls in 1872–'73, 334 or 28 per cent have died; but the record of the fourth period of five years is incomplete, and the death rate for the twenty years will, therefore, be somewhat larger than 28 per cent. During the first period 142 died, or 11.9 per cent; during the second, 72 or 7 per cent of those alive at the beginning of the period; during the third, 75 or 7.7 per cent of the survivors; and during the fourth or incompleted period there have already been reported 44 deaths, or 5 per cent of those alive in 1888–'89.

The death rate of both of these classes is considerably higher than it would have been if the disabled or amputated limbs had been the only results of the war service that tended to shorten life; for it must be observed that many of these men had other wounds or disabilities besides those affecting their limbs.

In general terms, the age of those persons during the twenty years of observation covered the period of life from 30 to 50 years of age, and the average annual death rate was for the amputated cases 13.6 per thousand and for the others 16 per thousand living at the beginning of the period. The experience of insurance companies shows the death rate of men between the ages of 30 and 50 to be an average of about 9 per thousand annually. The increase among our pensioners to 13.6 and 16 expresses the influence of their disabilities and of the exposures associated with the incurrence of them in shortening their lives.

These rates, large as they are, compared with the average rate prevailing among individuals of corresponding age in civil life, apply only to a certain period of twenty years. To determine the influence of wounds and exposures in increasing the death rate of the soldiers of the war of the rebellion we should require to know the number of the wounded or otherwise disabled living at the close of the war and the deaths that occurred among them up to June 30, 1870, when the statistics of the operations of this office under the artificial-limb laws take them up and account for them with precision. It is not possible to obtain these data in the cases of the disabled men, but the facts concerning the amputated cases are better known.

At the close of the war there were, according to the records of this office, 13,052 recoveries from amputation of the arm or leg such as would have entitled each to benefit under the artificial-limb law subsequently enacted; and as in 1870 only 10,187 applied for artificial limbs or commutation, it may be inferred that 2,865 of those maimed soldiers had died up to that time—21.95 per cent of their total—a much larger percentage of mortality than is shown by any of the subsequent quinquennial periods. By incorporating these figures with those previously given it is found that during the twenty-five years, from the close of the war to 1890, 5,621 subjects of amputation died out of a total of 13,052 cases, or 431 per thousand. Dividing the quarter of a century into successive periods of five years the deaths during the first period were 2,865, or 21.95 per cent of the total; during the second 999, or 9.81 per cent of the survivors at the beginning of the period; during the third 557, or 6.06 per cent of those surviving in 1 75; during the fourth 583, or 6.75 per cent of those alive in 1880; and during the fifth, 1885–'90, 610, or 7.58 per cent of those on the rolls in 1885. It is thus seen that the mortality rates of those men who were disabled during the war was very large during the early years succeeding the occurrence of their disabilities, and from what follows it may be observed that even now their annual death rate is largely in excess of that of the average citizen.

At the close of the war the recoveries from amputations of the upper extremity numbered 6,249. In 1870, 1,193 or 19.14 per cent of their number may be assumed to have died, for only 5,053 filed their claims for artificial arms; 557 cases, or 11.02 per cent of those alive in 1870, died before receiving a second benefit; 268 cases, constituting 5.96 per cent of the survivors, died after the second but before the third benefit; 293, or 6.93 per cent of those living in 1880, died before 1885, and 305, or 7.75 per cent of those alive in the last-mentioned year, died before the expiry of the next five years.

The recoveries from amputation of the lower extremity numbered 6,703 at the close of the war; but as only 5,134 reported for artificial limbs, 1,569, or 23.41 per cent, may be assumed to have died. The deaths and the percentages constituted by them for the next four quinquennial periods were as follows: 1870–'75, 442 and 8.61; 1875–'80, 289 and 6.16; 1880–'85, 290 and 6.59; 1885–'90, 305 and 7.41.

The death rate of those who suffered amputation of the leg was greater than that of the cases of amputated arm during the early period succeeding the war, but during the later years the rates in the two sets of cases have not varied much.

Since each of the 21,102 persons on the rolls has received an artificial limb or its commutation one or more times, the number of certificates issued by this office has amounted to 68,456—40,959 in cases of amputation and 27,497 in cases of loss of use of limbs—the relative percentage being 59.83 and 40.17.

The certificates entitling to benefit in cases of amputated upper extremities number 20,185, of which 287 were for limbs in kind and 19,898 for commutation. With the artificial limb furnished in kind the law provides for the free transportation of the pensioner to and from the place of manufacture, thus affording an opportunity to those who had settled in the West to have a trip to New York, Philadelphia, or other eastern city which might be utilized in seeing old friends and relatives. Notwithstanding this inducement to be fitted with the artificial arm 98.6 per cent of the arms which might have been called for were commuted. Only a little over one man in a hundred of these armless men elected to receive the arm. Its usefulness is regarded as nil, and although some may claim it to be an ornamental addition to a maimed individual, the man with a war record generally prefers his empty sleeve. The records show also that few of those who were furnished with an artificial arm called for a renewal of it at a subsequent period.

The artificial leg is shown by the statistics to be an appliance of much more practical value than the arm. Of 20,214 certificates issued in cases of loss of the leg the limb in kind was called for in 4,421, the money equivalent in 15,793, or in 21.9 and 78.1 per cent respectively. At first sight it would seem from these statistics that the allowance of an artificial leg once every five years is largely in excess of the needs of the maimed soldiers, since so many elected to receive the money value rather than the limb; but it must be remembered that in many cases, on account of conditions of the stump, a leg can not be worn, and that unfortunately the financial circumstances of many of the old soldiers are such as to prevent them from accepting the expensive luxury of an artificial leg when its acceptance would cause them the loss of the $75 dollars which they would otherwise obtain. Although the names of 5,134 men crippled by amputation are on the rolls, only 4,421 artificial legs were used during the whole period of twenty years. Hence from these statistics nothing can be gathered concerning the durability of an artificial leg. The manufacturers are under bonds to furnish good and satisfactory limbs without extra charge to the soldier, and to make good for five years all defects of material or workmanship without additional charge, subject in all cases to the inspection of such persons as the Surgeon-General may designate; and it must be said to their credit that this office is unaware of any failure on their part in this respect. The care exercised in the manufacture and fitting is such that a complaint of misfit, discomfort, poor workmanship, or inferior materials is hardly known in connection with this service.

In amputations of the foot 560 certificates were issued, 24 for the artificial foot and 536 for its money value, $50—4.3 and 95.7 per cent respectively.

There were 16,410 certificates issued in cases of loss of use of the arm. Few of these were susceptible of benefit by surgical apparatus, only 34 such having been recorded in the twenty years. Commutation was paid in 16,376 cases.

Similarly, in loss of use of the leg, benefit was derived from apparatus in only 49 cases while commutation was paid in 11,087.

ARMY MEDICAL MUSEUM.

The number of specimens received during the fiscal year was 987; total number of specimens in the museum June 30, 1892, 31,228. The following statement shows the additions to the different sections:

Pathological section:	
In museum June 30, 1891	10,140
Received during the year	165
In museum June 30, 1892	10,305
Anatomical section:	
In museum June 30, 1891	3,315
Received during the year	96
In museum June 30, 1892	3,411
Section of comparative anatomy:	
In museum June 30, 1891	1,717
Received during the year	0
In museum June 30, 1892	1,717

Microscopical section:	
In museum June 30, 1891	11,870
Received during the year	400
In museum June 30, 1892	12,270
Miscellaneous section:	
In museum June 30, 1891	1,332
Received during the year	192
In museum June 30, 1892	1,524
Provisional pathological section:	
In museum June 30, 1891	1,161
Received during the year	113
In museum June 30, 1892	1,274
Provisional anatomical section:	
In museum June 30, 1891	706
Received during the year	21
In museum June 30, 1892	727

RECAPITULATION.

Total number of specimens in museum June 30, 1891	30,241
Total number received during the year	987
Total number in museum June 30, 1892	31,228

The following are some of the more interesting specimens added to the museum during the fiscal year ending June 30, 1892:

A series of twenty casts in cathcartine (glue and glycerin), colored after nature, showing different pathological conditions. After specimens in the museum of the Royal College of Surgeons, Edinburgh. Purchased.

Specimens of sarcoma of thigh and arm, affecting bones and soft parts. Presented by Dr. J. T. Sothoron, Washington, D. C.

Specimens of sarcoma of suprarenal capsule and jejunum. Presented by Surgeon R. H. Tilton, U. S. Army.

A series of teeth, most of which were removed from Indians in South Dakota, show caries and atrophy. Presented by Dr. Z. T. Daniel, physician United States Indian service.

Four plaster casts showing various conditions of tympanic membranes. Presented by Dr. B. A. Randall, Philadelphia, Pa.

Bones of the right forearm which were fractured by shot wound in September, 1862. The soldier returned to duty in March, 1863. Discharged from service in April, 1863. In December, 1891, septicæmia set in, necessitating amputation in January, 1892. Presented by Dr. S. M. Whistler, Bainbridge, Pa.

Portions of lungs of a cow, showing tubercles. Presented by veterinary surgeon C. B. Robinson, Washington, D. C.

Perforated left innominate bone of a volunteer officer, who was shot in July, 1862, and never fully recovered. Died January, 1892.

Heart showing abscess of muscular wall and old ante-mortem clot in left ventricle. Death from hemorrhage into the lungs. Presented by Acting Assistant Surgeon D. S. Lamb, U. S. Army.

Greatly enlarged models of eye, head, and larynx. Prepared by Dr. Auzoux, Paris. Purchased.

Two wax composition models of cerebrum of an adult, showing the fissures and convolutions, after Prof. A. Ecker. Made by Dr. A. Ziegler, Freiburg. Purchased.

Series of eight wax composition models of brains of vertebrates. Prepared under direction of Prof. R. Wiedersheim, in Freiburg, by Dr. A. Ziegler. Purchased.

Brain of a pure-blood Apache Indian. Presented by Surgeon W. Matthews, U. S. Army.

Cast of human brain, showing the localization of the cortical centers, after Exner. Made by G. Matauscheck, Vienna. Purchased.

Series of thirty-one casts in cathcartine (glue and glycerine), colored after nature, showing dissections and surgical operations. Purchased.

Series of thirty wax composition models, showing the development of the human embryo, of the vertebrate eye, of the heart of the human embryo, and of the human external genitals. Made by Dr. A. Ziegler, Freiburg. Purchased.

Neuro-topographical bust, devised by Dr. W. C. Krauss. Purchased.

Plaster model showing median sagittal section of head and neck of an adult male, indicating the varieties of epithelia by colors. Made by F. Ziegler, under direction of Prof. B. Solger, of Greifswald. Purchased.

A bronze medal struck in honor of Fancesco Redi, an Italian physician (1626–1697), by Cosimo III, Grand Duke of Toscana.

A beautiful bronze medal, 3½ inches in diameter, of M. Malpighius, an Italian physician and author (1628–1694).

A bronze medal, 6¼ inches in diameter. A gold medal of the same size and design was presented to Prof. Rudolph Virchow on his seventieth birthday, October 31, 1891.

A portrait in oil of Xavier Bichat, French physician and author (1771–1802). Presented by Mr. E. A. Andrews, of the Corcoran School of Art.

LIBRARY.

The following table shows the additions made to the library during the fiscal year:

Description.	On hand June 30, 1891.	Added during fiscal year.	Total, June 30, 1892.
Medical journals	30,048	1,164	31,212
Medical transactions	4,305	199	4,504
Bound theses	1,574	89	1,663
Bound pamphlets	2,039	34	2,073
Other medical books	64,003	3,745	67,748
Total	101,969	5,231	107,200
Medical theses	50,801	2,641	*53,442
Medical pamphlets	101,424	11,140	112,564
Total	152,235	13,781	166,006

*Of the total number of single theses on hand there were bound during the year 1,323 in 89 volumes.

There were presented to the library during the year 661 books and 9,218 pamphlets and journals; also 24 photographs.

Volume XIII of the Index Catalogue, including from "Sialagogues" to "Sutugin," forming a volume of 1,005 pages, has been completed and is now in the printer's hands. The edition will be distributed as soon as bound to those institutions and persons who have received the previous volumes. The preparation of the manuscript of Volume XIV is already well advanced.

PROVIDENCE HOSPITAL.

Under the provisions of the act of March 3, 1891, making appropriation of $19,000 "for the support and medical treatment of ninety-five medical and surgical patients who are destitute in the city of Washington, under a contract to be made with the Providence Hospital by the Surgeon-General of the Army," a contract was duly entered into with the institution named, and has been fulfilled to my satisfaction and without complaint on the part of the persons sent there for treatment. The following is a statement of the amount of relief afforded under the appropriation:

Number of patients in hospital July 1, 1891	95
Number of patients admitted during the year	89
Total number of patients treated	

Russell, Wyo. Their personnel consists of 3 medical officers (others may be attached for instruction), 7 noncommissioned officers (3 hospital stewards, and 4 acting hospital stewards—others to be attached for instruction), 1 buglar, 1 artificer, 1 tailor, 40 (or more) privates.

The object of this organization is twofold: (1) To always have at hand, for any emergency, a trained body of sanitary soldiers, accustomed to working together and the capabilities of each unit thereof well known to its commander. (2) To build up a training school through which, ultimately, all enlisted men of the hospital corps will pass. The advantages to the service arising from the possession of such an organization are obvious.

To establish the divisional field hospital at Pine Ridge, S. Dak., in 1890, it was found necessary to assemble men of the hospital corps from every quarter. Unknown to each other or to their commanding medical officer, trained by different methods, gathered together in haste and under adverse circumstances, these elements had to be molded into homogeneity just when complete organization was most needed. The excellent results obtained bear testimony at once to the ability of the medical officer in charge and the inherent good quality of the material at his command; but had there been a perfectly organized, trained, and equipped company of sanitary soldiers immediately available for that campaign its value would have been inestimable, for with it not only could a divisional field hospital have been at once established at the base of operations, but from it detachments could have been made if necessary for field work with the various commands, hardly any of which were sufficiently supplied in this direction.

The organization of these companies as training schools for the hospital corps justified an amendment of army regulations whereby the Medical Department is authorized to make direct enlistments therein of a class of men from civil life who, by previous education and inclination, have aptitude for the special work of the corps as druggists, clerks, school-teachers, cooks, artisans, etc.; men of certain attainments who desire to take advantage of the opportunities offered by this school to become proficient in military sanitary work; it also relieves the line of the army to a considerable extent of a hitherto constant drain of material valuable to it, men who would make noncommissioned officers; and these men became useful members of the hospital corps under the three-year law only about the time of the expiration of their service.

The course of instruction by recitations, lectures, demonstrations, etc., is both theoretical and practical, combining at once the training common to all soldiers (drill, etc., the chief end of which in this connection is discipline) with the special instruction of the sanitary soldier. The curriculum is sufficiently comprehensive to give the men a fair knowledge of the requirements of their position and comprises infantry drill (through the school of the company), U. S. Infantry Drill Regulations; Elementary human anatomy and physiology (Steele); Theoretical nursing (Weeks); rudiments of materia medica and pharmacy (lectures); surgical instruments, dressings, and preparations for operations (lectures); First aid (Dietz); bandaging (practical); Bearer drill (H. C. manual); Field work (Smart's handbook, H. C.), including pitching and striking of field hospitals, formation of dressing stations, field cookery, use of field equipment, Medical Department, practical application of first aid in the field, the use of wheel and pack transportation, care of horses and driving, etc.

In connection with the theoretical instruction the men are in turn 'tailed for special instruction in the various departments of the hospital. The company and hospital kitchen (Army Cookbook) constitute a school of practical cookery in which men who have aptitude in that direction are taught the management of the ration and other food supplies and its preparation for the table and the sick. After a course covering about six months, those sufficiently proficient are assigned to duty with the various detachments serving throughout the Army, when their practical education may be said to begin. Up to the date of this report 3 acting hospital stewards and 20 privates have been so assigned.

The benefits derived from this course of special instruction in the work of the hospital corps fully warrant me in recommending that legislative action be obtained to place the companies of instruction on a permanent basis.

I regret that the instructions of company bearers has not progressed so satisfactorily as is contemplated by the Army Regulations which direct their assignment and specify their duties. This is due to no want of interest on the part of medical officers but to the failure of the men to report for litter drill and instruction in first aid at the specified times. The coöperation of company commanders in seeing that their company bearers have the needful opportunity of being instructed in their duties is essential to their effective service in emergencies.

As regards the clothing of the hospital corps when on nursing or ward duty I recommend the issue of white linen blouses and pantaloons, as these are less absorbent than the regulation articles of clothing; and in case of infectious diseases they would show stains more readily and could be immersed in disinfecting solution without injury to their texture.

IDENTIFICATION OF DESERTERS, ETC.

The identification of deserters, men dishonorably discharged from service, and others of bad character who have presented themselves for reënlistment has been successfully carried out by the figure card system. The location, size, character, etc., of the permanent marks and scars on the person of a recruit have been carefully noted at his examination for enlistment on an outline-figure card, which, when compared with the cards of deserters and undesirable men that have been accumulated since the system was instituted, enables this office to determine whether the candidate is one of the men known to be objectionable characters. Most of the deserters from the Army keep at a distance from recruiting offices and military stations to avoid possible recognition and arrest, so that the number of deserters captured by this system forms but a small percentage of the total number of deserters. Nevertheless the results are good, for the detected men are in all cases those hardened individuals whose presence in a company gives it a bad name by their acts, and ultimately a bad character by their influence on such of the younger soldiers as may be led by them into evil habits.

From July 19, 1890, to July 16, 1892, the identity of 173 such men was established, with the result of removing them from the ranks by sentence of court-martial or by special order from the Adjutant-General's Office. There were also 5 cases in which the suspects deserted about the time their identity was reported, so that no investigation could be made. Their desertion may, however, be regarded as having proved the case against them. These occurred early in the history of the system, as afterwards the practice was adopted of recommending the arrest by telegraph of the individual when the evidence of identity seemed to warrant that action. Two other cases remain to be noted—

one in which the man, an ex-convict, had authority for his enlistment, and another in which the individual had been discharged at the Government Hospital for the Insane at the time of the report. On the other hand, in 4 cases in which this office claimed the identification of a certain recruit as a former deserter, the identity was not established on personal examination.

The record thus shows that in 184 cases of desertion, etc., in which the cards were regarded as warranting a report of identity, there were 180 successes and only 4 failures.

In addition to those just enumerated, 6 cases of notable similarity, although not identity, of all the marks were submitted as doubtful cases not warranting arrest, but suggesting investigation. In but one of these cases was conclusive evidence produced that the cards represented different individuals; in 4 the statement of the officer conducting the inquiry that in his opinion there was no identity had to be accepted as final, and in the sixth case the inquiry was dropped for want of funds to procure a photograph of the man.

During the period mentioned there were also 76 cases in which the evidence of identity was deemed conclusive, but as the suspect in each case was already out of the service the cases were reported to the Adjutant-General's Office merely to connect the enlistments and military histories of the men.

In 5 cases of desertion recently submitted the results of the investigations instituted have not been reported. There remain also at date 27 cases of identity ready to be reported for connection of enlistments.

EXAMINATION OF RECRUITS.

During the year 25,050 recruits were examined—white, 23,725; colored, 1,325. Of these 15,724 were rejected—white, 14,884; colored, 840. The rate of rejection per thousand examined was 638.4 for the total; 638.0 for the white and 646.0 for the colored. These are about the usual rates presented by the records of the recruiting offices. Defects of vision caused the rejection of 84.3 of every thousand of the candidates; developmental diseases, 53.5; diseases of the digestive system, 41.3; genito-urinary and venereal diseases, 59.1; and alcoholism, 22.7. Age disqualified in 49.9, height in 10.1, weight in 29.4; most of these being under rather than over the limits. Imperfect knowledge of the English language was the cause in 21.2 and the moral character in 17.8.

The post surgeons of Fort McPherson, Ga., and Washington Barracks, D. C., refer to the inferior quality of recruits received from the regimental recruiting service; while the depot surgeon at Jefferson Barracks, Mo., regards the recruits of the year as inferior to those of former years.

FORT MCPHERSON, GA. (*Maj. J. C. G. Happersett*).—The comparatively large number of admissions to sick report is owing to the number of recruits received during the preceding month and to the fact that many of these men were and are sick from venereal ailments. In a large majority of these recruits no medical examination was made at the time of enlistment, the recruiting officer acting entirely upon his own judgment. A man presented himself at the post for enlistment who, on physical examination, was rejected by the medical officer. The same man reported a few days later with a number of other accepted recruits from Rome, Ga.

WASHINGTON BARRACKS, D. C. (*Maj. J. K. Corson*).—The class of recruits recently received at this post from the various stations of the regimental recruiting service have not, in my opinion, compared favorably with those ordinarily transferred from the depot. While there has not been always objective evidence of physical incompetence sufficient to reject, the men have in many cases proved to be dull, illiterate, and deficient in physical vigor and activity. Of the 28 men received from this special recruiting service since January, 1891, 3 were discharged as rejected recruits and 11 have been on sick report one or more times.

JEFFERSON BARRACKS, MO. (*Maj. D. G. Caldwell*).—The habits of the recruits are improving; there is less drunkenness than formerly, and disorders of all kinds occur here less frequently than during previous years. This is to some extent due to the enlistment of a better class of men. The canteen, no doubt, exercises a favorable influence, and monthly payments limit their means to such an extent that they are unable to continue a debauch for a sufficient length of time to get on sick report. * * * The moral character of the recruits enlisted during the past year was better than formerly, but physically they were inferior to those previously enlisted.

MEDICAL DEPARTMENT OF THE NATIONAL GUARD.

Much attention has been given by this office to the organization of the medical department of the national guard, and every opportunity has been embraced of assimilating their methods to those of the medical department of the Army with a view to effective coöperation in time of war. It is as needful for the care of the sick and wounded of a large army that its medical officers be trained by the same methods as it is for the military success of the command that each of its component organizations shall have been drilled in the same system of military tactics.

The reports of our medical officers who have been on duty at some of the encampments of State troops show wherein lie the defects of their medical organization. Many of the medical officers of the guard are earnest students of military sanitary work and have given public expression to the defects of their system and the importance of remedying them.

Two of these defects are radical: the absence of an organized medical staff in the service of the State, and the absence of a hospital corps for service under that staff. These require and should have legislative action for their remedy. Medical officers are appointed to regiments, without examination as to their fitness for military duty, on the recommendation of the commanding officer of the organization; but, if mustered into the United States service, they would be subject to detail for such duties as each was best capable of performing irrespective of the military organization which carried them on its rolls. State medical boards should, therefore, examine those recommended for position on the medical staff, and assignments should be made in accordance with expediency in time of peace, location entering chiefly as a factor, and with known ability in view of anticipated responsibilities in time of war.

Service under the regimental medical officers of the guard is performed by details from the companies. The disadvantages of this system are that men wholly unfitted for the duties may be detailed, and that others who are well qualified by natural constitution and careful training may be relieved from their special duties at any moment by changes in the stations of their commands. It is sometimes claimed that the excellent working of our medical department during the war of the rebellion was effected under the system of regimental medical officers with details of enlisted men for hospital duty; but the claim should rather be that our medical department achieved its noble record in spite of these drawbacks. Our field division hospitals that were ever ready to pick up an exhausted soldier on the march or to receive hundreds of gravely wounded men from the line of battle were organized by treating the regimental medical officers as staff officers subject to the orders of medical directors and irrespective of State or regimental number; and the vital importance of the work done by these hospitals made permanent the details of the experienced men who were on duty with them. In fac the medical work of the war of the rebellion, which at first under the regimental system was such as to cry aloud to the country for help to the suffering wounded and to bring into existence the Sanitary and Christian Commissions and many State aid societies, became after the development of the division field hospital system a very model for the armies of the civilized world. This success was achieved it may be said under fire on the battlefield; and to accomplish it the medical and hospital systems now in use in the national guard of the various States had practically to be broken up in favor of a medical staff with a specially trained corps of hospital and ambulance men such as the Army has now been provided with by Congress.

So earnest are many of the medical officers of the national guard that they have recently organized an Association of the Military Surgeons of the National Guard of the United States for coöperation in making the medical department of the military forces of each State thoroughly fitted to take its place in the field either by itself or as a component of a national medical department. The second annual meeting of this association was held at St. Louis, Mo., in April last. Speaking of the coöperation of this office with the purposes of the association the president, Surg. Gen. Nicholas Senn, Chicago, Ill., remarked in his opening address:

> The General Government has encouraged us from the very beginning by detailing for our benefit a number of the oldest and most experienced surgeons to attend our meetings. We have eagerly availed ourselves of their wise counsel in planning the sphere of our work, and will look to them in the future for instruction in the practical details of our duties as military surgeons.

The association shall assuredly have all the support which this office has the power to render.

Gen. Senn refers as follows to one of the defects of the present system:

> We can not legislate for the past, but we must use our combined influence to secure the best obtainable material for the medical staff in the future. In most of the States the appointment of military surgeons is virtually in the hands of the regimental commander. Personal friendship, political influence, and social qualifications have often been more weighty in securing a commission than a thorough knowledge of the art and science of medicine and surgery and other qualifications necessary to make a good military surgeon. This is certainly not as it should be. A colonel is expected to know all about military tactics and discipline, but the law or usage which gives him the unlimited power to appoint his medical officers is a great evil and should be abolished if we expect to fill vacancies as they occur in the future with the best available material. The appointments should be made as in the regular Army, by competitive examination conducted by a board of medical officers. This can readily be accomplished as soon as each State has its own association of military surgeons. Let each State association appoint a board of examiners, composed of three members, which can conduct the examination of candidates at any of the regular meetings whenever it becomes necessary to fill a vacancy. As soon as it is generally known that appointments are made on merit and not by favoritism, the reputation of the medical department of the national guard will be greatly enhanced in the estimation of the line officers, the medical profession, and the public. The standing of the medical officer in military circles and the community will be proportionate to the height of the standard fixed by the examination. When commissions are obtainable only after a thorough and satisfactory examination they will be of some value to their holders, and it will then be some honor to be known and seen as a military surgeon. The requirements of admission into the medical service of the national guard should be gradually made so stringent that anyone who gains entrance will be recognized as a scientific man and physician and surgeon of more than average ability. A commission obtained in this way will then be regarded as of far greater value than a diploma from any of our medical colleges. Let me express the hope that the time is not far distant when the regimental commanders shall have no voice in the appointment of his surgeons, but when the door to the entrance into the medical service shall be carefully guarded by a competent medical guard, and only such

> candidates are permitted to pass who shall be a credit to the national guard and an honor to the medical profession.
>
> In most of our States the medical officer remains with the regiment, squadron, or battery with which he first became identified. If he is connected with a regimental organization he may expect eventually to reach the rank of major, but if he is attached to a smaller troop promotion is out of the question. It sometimes happens that the pleasant relations which first existed between the commanding officers and a surgeon, for some reason or other, are disturbed, to the mutual detriment of both sides, rendering at the same time military life unpleasant. It is also often the case that a military surgeon is placed on duty with an organization in localities much nearer the home of another colleague than his own, making it necessary to travel unnecessary distances to supply the command with medical aid. For these and other reasons it would be advisable to establish a medical corps in each State to be under the supervision of the surgeon-general or a medical director, who could detail the medical officers for duty as location and other circumstances might dictate. By making the medical officers independent of any particular regiment or smaller detachment many unpleasant experiences might be obviated, and the medical service would be rendered more efficient, and often no inconsiderable expense to the State could be saved; at the same time the surgeons would make many additional pleasant acquaintances. I am very anxious that this subject should receive due attention, not only here, but in the different State associations.

In an address to the association Col. C. R. Greenleaf brought up impressively the need for a knowledge of military methods on the part of the military surgeon. The reports of our medical officers who have been present at national guard encampments show that State military surgeons as a rule have little information on these subjects. Col. Greenleaf remarked:

> The ever-present necessity with the medical officer is a comprehensive knowledge of military affairs. No other officer of the Army is required to be individually familiar with the duties of every other military department in addition to his own, and yet this is the task which the sanitary soldier must master if he wishes to be successful in his duties in the field.
>
> Imagine, if you please, that we are to-day at war with a foreign nation and have an army of occupation in the field of 100,000 men. That army is necessarily made up of members of the national guard, for in time of war the regular Army is but a nucleus or color-guard of the fighting force. The administration of its Medical Department consists of 2,600 officers and men; under ordinary circumstances 5 per cent of the command, or 5,000 men, are constantly sick and wounded, while after a battle the noneffective list is swelled to 10 per cent, or 10,000 men. An accident of date of commission may make any one of you gentlemen the medical director of this force. What would you do after reporting to the commanding general and finding yourself face to face with the responsibilities of such a position? There is no time to learn and no one to advise with; each branch of the service has all it can do for itself, and you are practically alone, with the knowledge that each day of unaccustomed field life will, slowly but surely, add to your minimum of noneffective sick. You also know that there must quickly be a fight, involving a necessity for the care of an additional 10 per cent of wounded. The efficiency of that army, the care of its sick and wounded, and your own reputation depend upon your doing the right thing, *then and there.*
>
> If advantage has been taken of the opportunities furnished to all surgeons of the national guard for thoroughly learning these comprehensive duties, you will find that familiarity with those of an adjutant enable you immediately to establish order through a record system; to secure needful shelter by correctly preparing the necessary requisitions upon the quartermaster, to secure proper food in a similar manner from the commissary, to properly place and regulate the men of your hospital corps as any regimental or company commander would do, and finally to preserve discipline and so coördinate the several military systems that all shall work as one harmonious whole under the experience of your training as a commanding officer.

In addition to communications and addresses on military surgery several interesting papers were read on medico-military subjects, such as:

Some Needs of our National Guard, by Lawrence C. Carr, major and surgeon, Ohio N. G.

The Sanitation of Military Camps, by C. M. Woodward, surgeon-general M. S. T.

Tenting on the Old Camp Ground, by C. L. Lindley, Twelfth Infantry, N. G. S. N. Y.—referring to the dangers of stationary camps.

The Sanitary Duties and Rights of Medical Officers as Affecting their Relations with the Commanders of the line, by A. C. Girard, major and surgeon, U. S. Army.

Some Notes on Military Sanitary Organization, by John Van R. Hoff, major and surgeon, U. S. Army.

Maj. Hoff exhibited to the delegates the appliances for field work of the Medical Department of the Army and demonstrated the training and drill of the Hospital Corps by a detachment from the company of instruction at Fort Riley, Kans. The following from the report of the transactions of the association shows the success of this exhibition and the credit achieved by Maj. Hoff and his men:

> Maj. Hoff commenced by putting the detachment, consisting of eight men, through a drill, after which he invited the inspection of the surgeons present to the equipments of the men, after which a general explanation was entered into regarding the different tents and their usages, which were erected there as explained, in the same position as they would occupy in active service. The details of every department were lucidly given and were very instructive. After this exhibition Maj. Hoff took his detachment to the exercise ground below, where exhibitions of the following work were given: Bearer drill with field litter; extemporized litters with blanket, coat, and rifle; lifting, lowering, and carrying patients by one, two, three or four bearers; passing obstacles; first aid drill; the application of temporary dressings, utilizing materials ordinarily at hand on the battle field for splints, etc.; assembly of squads; formation and dismissal of detachment.
>
> The neatness and dispatch with which the above exercises were carried out elicited frequent applause, not a single hitch occurring during the exhibition. At each particular branch of the above exercises Maj. Hoff explained in detail the method of instruction and the valuable assistance in time of war of such trained detachments.
>
> After this part of the exercises had been satisfactorily completed and discussed by the gentlemen present, Maj. Hoff invited suggestions from the surgeons present as to what subjects they would like to see the detachment of the Hospital Corps work upon, and the following subjects were called for by the members present: Fracture of right clavicle; dislocation of left shoulder; fracture of right arm, middle third (compound); fracture of left forearm near elbow; hemorrhage from right femoral artery; perforating gunshot wound, left chest; resuscitation of apparently drowned; sunstroke.
>
> These exercises were of a very interesting and educational character. Two men were selected to take the place of wounded men. Maj. Hoff, acting as army surgeon, supposed to be on the battle field, saw the wounded men, and on examining them and finding the nature of their injuries, described such injuries on a tag taken from a book which he carried for that purpose and fastened it to the coat of the wounded man. The Hospital Corps then followed, and on discovering the nature of the injury from the tag, set to work in first-aid dressing. This was done in a thoroughly scientific manner, showing the completeness of the training of said Hospital Corps, and the celerity with which it was done called forth the admiration of those present. Maj. Hoff then catechised the hospital detachment as to why they did certain things in certain cases, and also asked the visiting surgeons to do the same. This was done quite extensively, and the promptness and accuracy of the answers given seemed not only to surprise the questioners, but show a thoroughness of training.
>
> Maj. Hoff, at the conclusion of the exhibition, was highly complimented by all surgeons present.

HEALTH OF THE ARMY.

The health of the Army during the past year must be regarded as satisfactory, because whether the number of admissions be considered, the number constantly sick, the number of deaths or that of discharge for disability, the rates which represent these are lower than those of the previous year, and considerably lower than the corresponding rates of the previous decade.

The admissions to sick report numbered 1,365 per thousand of strength as compared with 1,384 in 1890 and with an annual average of 1,496 during the previous ten years. Of the 1,365 admissions 1,116 were for disease and 249 for injury, as compared with 1,141 and 243 in 1890, and with 1,250 and 246 during the decade. The number constantly sick was 42.01 per thousand of strength as compared with 42.71 in 1890 and with 43.49 during the decade. The average number of days lost by sickness for each man of the total strength was 15.3 during the year, as against 15.6 and 15.9, respectively, during the previous year and the previous decade. The discharges constituted only 17.23 per thousand men as compared with 23.01 and 31.37, respectively; and the deaths 8.05 as compared with 8.69 and 8.82.

In comparing our statistics with those of certain European armies we are able at last to congratulate ourselves that our discharge rate has been brought down to what may be regarded as the normal; and as this has been accomplished with no corresponding increase in the time lost by sickness it is certainly not due to the retention of sick men on the rolls. It may be attributed to the action of three causes, all of which were operative during the year; greater care in recruiting, greater care in recommending cases for discharge, and the beneficial results of treatment in the Army and Navy General Hospital, Hot Springs, Ark., of rheumatic cases that formerly terminated in discharge instead of in return to duty. The following tabular statement shows how our Army compares with those of certain of the European powers. Our high admission rate indicates merely that our men are taken on sick report whenever excused from any part of their military duty no matter how trivial or temporary the indisposition, while in other armies only the serious or hospital cases are borne on the records.

Army.	Mean strength.	Ratio per 1,000 of mean strength.						Sick time for each soldier.
		Admission.	Deaths.			Discharges.	Constantly nonefficient.	
			Disease.	Injury.	Total.			
United States, 1891	23,269	1,364.78	5.03	3.02	8.05	17.23	42.01	15.3
United States, 1890	24,234	1,384.25	5.25	3.45	8.69	23.01	42.71	15.6
United States, 1880–'89	23,928	1,496.08	5.89	2.92	8.82	31.37	43.49	15.9
Great Britain (Home) 1889	102,057	730.43	3.88	.69	4.57	15.89	41.48	15.8
Italy, 1889	218,917	749.27	7.24	.71	7.95	12.06	33.87	12.4
Prussia, Saxony, Würtemberg, 1888–'89	420,320	758.89	2.27	.92	3.19	16.64	28.76	10.5

The above statement of the European armies is exclusive of officers. The Italian division, stationed in Africa, had a mean strength of 6,828 men, with an admission rate of 865, and a death rate of 5.6. These troops are not included in the mean strength. 7,807 men of the Italian army were granted sick leaves for periods varying from three months to one year.

In the German army 6,270 additional discharges (14.91 per 1,000 of mean strength) were made of recruits for disabilities contracted prior to conscription.

The principal causes of the 1,365 admissions per 1,000 of strength were injuries, 248.91, the larger proportion of which consisted of contusions, sprains, and incised, lacerated, and contused wounds; influenza, 132.67 per thousand; catarrh and bronchitis, 124.58; diarrheal diseases, 108.21; rheumatism, 81.33; venereal disease, 72.46; malarial diseases, 62.23; vaccina, 62.19; dyspepsia, colic, etc., 56.30; abscesses, boils, etc., 51.10, and alcoholism, 40.01. Of the 42.01 men per 1,000 of strength constantly sick during the year, 8.06 were disabled by injuries, 5.01 by venereal disease, 3.93 by rheumatism, 3.67 by disease of the respiratory system, 3.18 by diseases of the digestive system, and 2.51 by influenza. It is thus seen that although venereal disease takes only fifth place in frequency of admission for disease, it forms the most important disease factor in detracting from the strength and efficiency of the Army.

The five principal causes of admission in our Army, shown above to be injuries, influenza, catarrh and bronchitis, diarrheal diseases, and rheumatism, may be placed beside those of the British, Italian, and German armies with credit to our troops from their relative freedom from venereal and skin diseases. In the home-service strength of the British army the admission rates, per thousand of strength, of the five principal causes, were venereal diseases, 212.10; injuries, 98.52; tegumentary diseases, 72.84; tonsilitis, 61.96, and catarrh and bronchitis, 48.34. In the Italian service venereal, 64.49; catarrh and bronchitis, 37.01; malarial disease, 28.21; diseases of the digestive system, 22.25, and measles, mumps, and other acute specific febrile affections, 15.36. In the German army tegumentary diseases, 196.59; injuries, 158.41; tonsilitis, 71.99; catarrh and bronchitis, 66.70, and diseases of the digestion, 45.66. The low rate of 19.83 for injuries is notable among the Italians, and the venereal rate 26.76 among the Germans.

The average strength of the Army as shown by the returns of the medical department was: White troops 20,909; colored 2,064; Indians 296; a total of 23,269. There was in general terms more sickness among the Indians than among the colored troops, and more among the latter than among the whites. The admissions per thousand were, respectively, 1,797, 1,577, and 1,338. The rate of the colored troops was considerably less than that of 1890, 1,733. The noneffective rate of the Indians was 52.36, of the colored troops 44.12, and of the whites 41.65; the average number of days lost by sickness for each man of the command was 19.1 for the Indians, 16.1 for the colored, and 15.2 for the white troops; the death rate 6.39, 7.11, and 8.40, respectively. The death rate of the colored troops was less than that of the white troops, and considerably less than their own death rate during the previous year and decade, respectively, 11.52 and 11.01.

As may be seen from the following tabular statement the sick rates among our colored troops compare favorably with those of the black troops in the British service.

Comparison between white and black troops, in the English army, serving in the West Indies.

Year.	Rates per 1,000 of mean strength.			
	Admissions.	Deaths.	Discharges.	Constantly non-effective.
1889:				
White	982.1	5.65	9.42	52.49
Colored	1,369	19.58	62.88	82.19
1879-'88:				
White	966.9	14.94	13.57	46.62
Colored	1,114.2	14.81	39.33	62.35

The Indians had no case of alcoholism among their admissions, less typhoid and other acute infectious diseases than either the white or the colored troops, and more venereal diseases, rheumatism, dyspepsia, colic, and constipation; but the greater proportion of their excess of admissions was due to their vaccination on entering the service.

The colored troops had less alcoholism and heatstroke than the whites, but more venereal disease, rheumatism, and diseases of the eye.

The deaths in our Army numbered 213, or 8.08 per thousand of strength; 133, or 5.03 per thousand from disease, and 80, or 3.02 per thousand, m injuries. Of these deaths 6 were due to alchoholism, 12 to typhoid er, 22 to influenza, 11 to consumption, 20 to pneumonia, 6 each to diseases of the heart and kidneys, 9 to disease of the liver, 18 to drowning, and 33 to gunshot injuries.

The discharges numbered 412 white soldiers, 43 colored, and 1 Indian, a total of 456, or 17.23 per thousand of strength. In 1890, 614 men were lost by discharge on account of disease or injury. Of the 456 lost during the past year 73 men were disabled by injuries, 82 by epilepsy, insanity, and other diseases of the nervous system, 46 by venereal disease, 42 by pulmonary consumption, 33 by chronic rheumatism, 31 by diseases of the heart and circulation, and 23 each by hernia and diseases of the eye.

Our discharges for venereal disease, 46 men, or 1.74 per thousand of strength, compare favorably with the rate of 2.86 given by 71 discharges in 1890, and with 3.94 given by an annual average of 94 men during the previous ten years. The fall in our discharge rate is also in part accounted for by the loss of only 31 men from diseases of the heart and circulation as compared with 56 men in 1890, and of only 33 by chronic rheumatism as compared with 52. In the one set of cases the influence of the care taken by post surgeons and medical directors prior to issuing certificates of disability may be distinctly recognized, and in the other the beneficial effects of the line of treatment at the General Hospital, Hot Springs, Ark.

HEALTH OF THE MILITARY DEPARTMENTS.

In the military departments the admission rate per thousand of strength varied from 961.05 in the Department of the Columbia to 1,540.59 in the Eastern Department, the Army average being 1,364.78; the rate of nonefficiency from 34.36 in the Department of the Columbia to 45.68 in that of Texas, the Army average being 42.01; the death rate from 6.57 in the Department of Arizona to 13.55 in that of the Platte, the Army rate being 8.05; the rate of discharge for disability from 10.03 in the last-named department to 21.95 in the Department of California, the Army rate being 17.23; the duration of treatment and observation in these cases of discharge varied from 60.9 days in the Department of Texas to 99.6 days in the Department of Dakota, the Army average being 79.8 days. The duration of treatment in the cases returned to duty did not vary much; 10.2 days, the shortest period, was reported from the departments of the East and the Platte, the longest period of 13.4 days from the Department of California, while the average of the Army was 11.2 days.

Taking all the rates into consideration, it would seem as if during the year the Department of the East had the worst record and that of the Columbia certainly the best.

When injuries, venereal diseases, alcoholism, and temporary disability from vaccination are excluded from consideration so as to determine the effect of climatic and other diseases incident to the life of a soldier in the various departments, the Department of the Columbia continues to show the best record, having an admission rate of 609.79 per thousand of strength, with only 19.72 constantly sick. The next best rate of admission, 804.97, is reported from the Department of California, and the next best rate of nonefficiency, 23.03, from the Department of the Missouri. The Department of the East continues to hold the highest admission rate, 1,029.65, but its nonefficiency, 25.13, is exceeded both by the Department of Arizona, 27.76, and that of Texas, 29.15. On this view of the case the last-mentioned department may be considered as having the worst record, since its admission rate of 988.78 falls but little below that of the eastern department.

THE DEPARTMENT OF THE EAST.

This department, with a mean strength of 6,171 men, had the highest admission rate of any of the departments, 1,540.59, as compared with the average of the Army, 1,364.78. This was due to an excess of cases of veneal disease, alcoholism, vaccination, catarrh, influenza, malarial fever, and diarrheal disease. For instance, its venereal rate was 94.15 as compared with the Army rate of 72.46; its alcoholism 52.67 instead of 40.01, and its vaccinations 125.42 instead of 62.19.

Its death and discharge rates differed but little in their totals, although syphilis figured to a larger extent as a cause of discharge than in the Army as a whole.

The constantly sick numbered 43.16 per thousand of strength as against 42.01 in the Army, vaccina and venereal diseases being the main causes of the slight increase.

Omitting the arsenals and posts of less than 100 men, the posts which principally contributed to the excess of sickness in this department were St. Francis Barracks and Fort Barrancas, Fla., the former with an admission rate of 3,121.50 and 55.43 noneffective, the latter with 2,629.63 and no less than 103.33 constantly sick. The two recruiting depots contributed largely also. Columbus Barracks, Ohio, with 2,209.89 admissions and 77.13 noneffective, and Davids Island, New York, with 1,884 and 51.62. Fort Hamilton, N. Y., and Fort McPherson, Ga., also had excessive rates, and Washington Barracks, D. C,, to a smaller extent.

Some of the posts presented excellent records. The constantly sick at Fort Niagara, N. Y., numbered only 17.72 per thousand of strength, and the admissions 808.22. Fort Warren, Mass., and Fort Columbus and West Point, N. Y., also had small rates. Willets Point, N. Y., improved its reputation by an admission rate of only 1,267.22 and a noneffective rate of 28.64.

DEPARTMENT OF THE MISSOURI.

This department had a mean strength of 3,728 men, an admission rate of 1,306.33, a death rate of 8.32, a discharge rate of 16.90, and 40.34 noneffectives, in all differing but little from the Army averages. Malarial fevers were more prevalent, 146.46 as against 62.23 in the Army, but this excess was offset by a somewhat lessened prevalence of vaccina, alcoholism, rheumatism, catarrhs, and tonsilitis.

Forts Reno and Sill, Okla., and Fort Riley, Kans., were the posts that prevented a material lessening of the rates in this department. Their admission rates were, respectively, 2,211.92, 1,947.37, and 1,408.33, and their noneffective rates 59.47, 45.67, and 58.18.

Some of the large posts had excellent records, Fort Leavenworth with its 704 men having only 1,058.24 admissions and 36.32 noneffectives per thousand strength, and the recruiting depot at Jefferson Barracks, Mo., 1,068.49 and 34.62. Fort Brady, Mich., had the low rates of 801.72 and 16.89.

DEPARTMENT OF DAKOTA.

The strength of this department, 3,193 men, gave an admission rate of 1,280.30, a death rate of 6.89, a discharge rate of 13.78, and a noneffective rate of 36.76, all considerably below the average rate of the Army as a whole. A lessened prevalence of malarial fevers, venereal diseases, alcoholism, and vaccina mainly contributed to these results.

Fort Custer, Mont., had the highest rates in this department, 1,985.56 and 59.43. Fort Meade, S. Dak., followed with 1,861.11 and 47.04. Fort Sully, S. Dak., and Fort Keogh, Mont., also were above the average. Fort Assinniboine, Mont., was below the average, but Fort Buford, N. Dak., Camp Poplar River, Mont., and Fort Missoula, Mont., brought down the departmental average by their respective admission rates of 792.68, 891.10, and 983.87, and their noneffective rates of 26.48, 18.85, and 20.90. A number of men in the field also gave low rates.

DEPARTMENT OF THE PLATTE.

The mean strength, 3,690 men, of this department furnished an admission rate of 1,363.14, practically the average rate of the Army; a death rate of 13.55, the excess over the average being chiefly caused by influenza and pneumonia; a discharge rate of only 10.03, and a noneffective rate of 38.11.

Fort Robinson, Nebr., gave the highest admission rate, 2,123.76, but without a corresponding noneffective rate. The same remark applies to Fort Niobrara, Nebr., with its admission rate of 1,747.47. Fort Logan, Colo., had the highest noneffective rate, 76.98, although its admissions were only 1,588.85 per thousand strength. Fort Du Chesne, Utah, had many admissions, but the noneffective rate was low.

The best rates were furnished by Fort Washakie and Fort Russell, Wyo., respectively, 861.84 and 870.02, with 23.41 and 25.57 noneffective per thousand.

DEPARTMENT OF TEXAS.

The mean strength of this department was 1,644 men, with all the rates somewhat higher than in the Army at large; admission, 1,463.50; death, 10.95; discharge, 19.46; noneffectiveness, 45.68.

The admissions show a somewhat exaggerated prevalence of malarial and diarrheal diseases, venereal and alcoholism, which is not offset by a lessened prevalence of vaccina, influenza, catarrh, and bronchitis. Alcoholism, venereal diseases, and pulmonary consumption contributed to the increased death rate; gunshot wounds and heart disease to the increased discharge rate. Malarial fever, venereal diseases, bronchitis, consumption, heart disease, and diseases of the digestive system contributed to the increased noneffieiency, while vaccina and rheumatism had noneffective rates below the average.

The large rates of this department were mainly due to sickness at Fort Sam Houston, Tex., its admission rate being 1,985.97, and its noneffective rate 56.59. Fort Clark, the next largest post, had good rates—1,256.72 and 39.61. Most of the smaller posts had high rates, but Fort Brown, Tex., was exceptional in this respect—790.32 and 38.18.

DEPARTMENT OF ARIZONA.

This department had a mean strength of 2,282 men, with an admission rate of 1,376.42, a death rate of 6.57, a discharge rate of 19.28, and a noneffective rate of 43.03, the whole differing but little from the average of the Army. The malarial admission rate was only 36.81 as compared with 62.23 in the Army as a whole. There was also less venereal disease and alcoholism, but more rheumatism, neuralgia, and diseases of the digestive system.

Fort Apache, Ariz., had the highest admission rate, 2,362.38, as also the highest noneffective rate, 62.27, if San Diego Barracks, Cal.

be excluded, as a number of consumptives from other posts sent there for the sake of the equable climate raised its rate of noneffectiveness to 90.15. Fort Wingate, N. Mex., had an admission rate of 1,776.47, but its noneffective rate was not correspondingly high. Fort Bayard, N. Mex., Whipple Barracks, and Forts Bowie and Grant, Ariz., had fair rates, while Fort Huachuca, Ariz., continued its excellent record of 1890 throughout the past year—admission rate, 601.94—noneffective, 19.39.

DEPARTMENT OF CALIFORNIA.

The mean strength of this department was 1,108 men; admission rate, 1,211.19; death rate, 7.22; discharge rate, 18.95, and noneffective rate, 44.32. Fewer cases of diarrhea, vaccina, alcoholism, and rheumatism were recorded than in the Army as a whole, but the cases of venereal disease were relatively large—97.47 per thousand as compared with 72.46.

The two large posts, the Presidio and Angel Island, had rates higher than the average of the department, respectively, 1,424.11 and 1,310.34 for the admissions, and 54.88 and 50.04 for the ratio constantly sick. At the others the rates were considerably lower, except at Alcatraz Island, where the noneffective rate was high.

DEPARTMENT OF THE COLUMBIA.

The mean strength of this department was 1,412 men; admission rate, 961.05; death rate, 8.50; discharge rate, 21.95, and noneffectiveness, 34.36. These low rates were due to a lessened prevalence of nearly all classes of disease, the most notable exception being alcoholism, the rate of which was 46.74 as compared with 40.01 in the Army.

At Fort Canby, Wash., both the admission rate, 1,730, and the noneffective rate, 47.15, exceeded the Army rates. At Fort Walla-walla, Wash., the noneffective rate was high, 52.32. With these exceptions the records of the posts in this department were excellent. The large post at Vancouver Barracks, Wash., had only 841.49 admissions and 33.51 noneffectives per thousand of strength, and Fort Spokane, Wash., 696.77 and 24.99.

HEALTH OF INDIVIDUAL POSTS.

Reports were received during the year from 124 military stations: (1) Thirteen garrisoned by 400 to 700 men each, average 487; (2) seventeen garrisoned by 300 to 400 men each, average 337; (3) seventeen with 200 to 300 men each, average 241; (4) thirty with 100 to 200 men each, average 131; (5) forty-seven having less than 100 each, average 47. Reports were received also from a mean strength of 899 men on field service during the year.

(1) The thirteen large posts had a mean strength of 6,333 men. Their sick rates were considerably in excess of those given by the Army as a whole. Thus their rate of admission was 1,457.29 as compared with 1,364.78, and their rate of nonefficiency 46.04 as compared with 42.01; but their average rates of death and discharge did not differ much from the average of the Army.

Nine of these posts had excellent records during the past year. The average admission rate of these nine was 1,110 per thousand of strength, ith 34 constantly sick; but the high rates of the four other posts e the rates of the thirteen to the numbers above stated. There be no doubt that the lessened rate of noneffectiveness from sickness at the majority of these posts is due to the sanitary care taken of the soldier, not merely of his person as to cleanliness, food, clothing, exercise, and amusements, but also to those measures of general sanitation which not only supply a garrison with good water and uncontaminated air, without as well as within the buildings, but which insure the immediate removal of garbage, waste water, and excreta, and provide healthful, well-plumbed, well-drained, and well-ventilated squad rooms.

Vancouver Barracks, Wash., is credited with the best record, 841.49 admissions and 35.51 constantly sick per thousand of strength. These rates are a great improvement on the previous record of this post, but good as it is it might have been better, as the reports show among the men of the garrison relatively more drunkenness requiring medical treatment than among the men of the Army as a whole. Fort Douglas, Utah; Jefferson Barracks, Mo.; Fort Leavenworth, Kans., and Fort Assinniboine, Mont., come next with somewhat over 1,000 admissions and from 30 to 36 constantly sick per thousand of strength.

Fort Douglas had more influenza and alcoholism than the average of the Army, but less malarial disease, diarrhea, and catarrh (probably because the cases were all reported as influenza), somewhat less venereal disease, and much fewer accidents and injuries. Jefferson Barracks had less influenza, diarrhea, injuries, and alcoholism than the Army average, but more malarial fevers, vaccina, and venereal—146.12 of the last. Indeed, if at this depot the results of vaccination of the recruits are deducted from its record it would contest first place with Vancouver Barracks, notwithstanding its high rate for venereal disease. Fort Leavenworth had less diarrhea, vaccina, and catarrhs than the average, but more venereal, and Fort Assinniboine less malarial and diarrheal diseases, venereal, and rheumatism, but more influenza. Omaha Barracks, Nebr., and Fort Monroe, Va., approach the Army average, although the former had a smaller admission rate and the latter a smaller noneffective rate.

Columbus Barracks, Ohio, had the highest rates, 2,209.89 admissions and 77.13 noneffectives per thousand of strength, closely followed by Fort Robinson, Nebr., which, owing to an excess of influenza, injuries, and alcoholism, had 2,123.76 admissions, although its noneffective rate was only 43.16. Fort Sam Houston, Tex., is perhaps entitled to second place, as with nearly 2,000 of an admission rate it had 56.59 noneffective, its excess consisting of malarial, diarrheal, and venereal cases, catarrhs, and injuries. Fort Riley, Kans., Davids Island, New York, and the Presidio of San Francisco followed. The high nonefficient rate at Fort Riley was due to the prolonged treatment of gunshot injuries received in the Sioux campaign. The rates for disease at this post are less than the Army average, and it is therefore included among the nine above mentioned as having excellent records for the year. So at the depot at Davids Island the excess of its admission rate was wholly caused by the vaccination of recruits. A rate of 619.74 for vaccina, with 18.77 constantly sick from this cause, reduces the rates at this station to 1,265.08 for admissions and 32.85 for noneffectiveness. It had less malarial disease, influenza, venereal disease, and alcoholism than the average of the Army, its rate for venereal being 63.98 as compared with 72.46, and for alcoholism 10.97 as compared with 40.01. The excess of sickness at the Presidio was due to influenza and venereal disease.

Of the three recruiting depots, two have been seen to have sick rates not only lower than the average of the large military stations, but much lower than the lesser rates of the Army as a whole. Jefferson Barracks, indeed, may successfully contest with Vancouver Barracks the title to the best record among this group of posts, because when allowance is made for vaccinations the admission rate of the depot falls to 872 as against 841 at Vancouver, and the noneffective rate to 28 as against 33.51. This shows the effect of sanitary improvements. Formerly this post was noted as having the largest noneffective rate in the Army. In 1888 it occupied the third place on the list of unhealthy posts; in 1890 its name did not appear in the list of twenty posts having the highest rates of admission and nonefficiency, and now it seems to be entering the list of candidates for the best record. The record at Davids Island is also satisfactory when compared with the Army rate. The depot at Columbus Barracks, Ohio, gives, on the contrary, the highest rates of any in this group of large posts. Deducting its vaccinations, there remains the high admission rate of 1,824.23 and a noneffective rate of 63.57. This excess of sickness was caused mainly by venereal diseases, influenza, tonsilitis, and diseases of the digestive system. Its venereal cases amounted to 266.20 per thousand of strength, as compared with 146.12 at Jefferson Barracks and 63.98 at Davids Island. The rates of noneffectiveness were, respectively, 15.95, 6.60, and 3.13. Nevertheless there is a gratifying improvement in the condition at Columbus Barracks as regards the prevalence of venereal diseases, for in 1890 the admission rate was 462 per thousand of strength, with 28.99 of nonefficiency; and while the discharges then numbered 24, they were reduced to 6 during the past year. The rates for alcoholism were low among the recruits—31.25 at Jefferson Barracks, 13.65 at Columbus Barracks, and 10.97 at Davids Island.

Fort Riley, Kans., had the largest number of deaths and discharges, as well as the largest rates, 9 deaths or 15 per thousand of strength, and 17 discharges or 28.33 per thousand; but 8 of the former and 11 of the latter were the result of gunshot wounds and other injuries, mostly received in the operations against the Sioux Indians. Davids Island had the smallest rates—deaths 1.83 and discharges 5.48 per thousand.

(2) The group of seventeen stations garrisoned by 300 to 400 men each had an aggregate mean strength of 5,736 men. The number taken sick was relatively larger than in the group just described, the admission rate having been 1,556.49 per thousand of strength. but the other rates did not differ much from the Army average.

Eight of these posts—Fort McPherson, Ga.; Fort Reno, Okla.; Fort Custer, Mont.; Fort Sill, Okla.; Fort Meade, S. Dak.; Washington Barracks, D. C.; Fort Wingate, N. Mex.; and Fort Niobrara, Nebr.; had admission rates ranging from 2,394.98 to 1,747.47 and noneffective from 61.12 to 42.68. Madison Barracks, N. Y., had a slight excess of admissions, but its noneffective rate was low; at Fort Bayard, N. Mex., this condition was reversed. The remaining seven posts were below the Army average.

The large sick rate at Fort McPherson was due to a general increased prevalence of nearly all classes of disease, but particularly to influenza and bronchitis, malarial fevers and diarrhea, three times as much venereal disease, and twice as much drunkenness as in the Army generally. The low personal morale of this garrison has no doubt much to do with the incidence of disease upon its members. Malarial disease, aided by diarrhea and injuries, is the chief cause of the great excess at Fort Reno, this post during the year having superseded Fort Sill as the most alarious military station so far as concerns noneffectiveness, although latter continues to have the largest number of admissions. At Fort

Custer venereal diseases, influenza, and injuries created the excess; at Fort Sill, malarial fevers and diarrhea; at Fort Meade influenza, diseases of the digestion, and injuries; at Washington Barracks, influenza, malarial fever, and venereal; at Fort Wingate, influenza, vaccina, rheumatism, and injuries; and at Fort Niobrara, influenza, vaccina, and injuries.

Some of the records of the seven remaining posts are exceedingly gratifying. Fort D. A. Russell, Wyo., and West Point, N. Y., had admission rates, respectively, of 870.02 and 981.23, and noneffective rates of 25.57 and 25.46. That of West Point is, however, the better record, for its sickness was materially increased by an excess of influenza, while an excess of venereal raised the rates at the other post. The rates at the five remaining posts are generally well below the average of the Army. The lessened sickness among the engineers at Willets Point would have materially improved its record had the rate for alcoholism been reduced to the average of the Army.

The death rate ranged from zero at Fort Wingate to 16.56 at Fort Reno, where 5 deaths occurred—3 from typhoid fever, 1 from kidney disease, and 1 from injury.

The discharge rate varied from 3.16 at Madison Barracks to 50.16 at Fort McPherson, where 16 men were disabled—6 by venerea, 17 by developmental diseases, 1 by consumption, and 2 by injuries.

(3) The seventeen posts garrisoned by 200 to 300 men had an aggregate strength of 4,101 men. The admission rate was 1,318.46 and the noneffective 43.34, the former a little lower, the latter a little higher, than the corresponding average of the Army. The discharge rate was a little higher and the death rate materially so—11.95, as compared with 8.05.

Only four of these posts had high admission rates. Fort Apache, Ariz., continues to present the worst record in this respect, 2,362.38 per thousand of strength, caused less by personal contagion and bad habits (for the rates for venereal and alcoholism are low) than by conditions, many of which are no doubt susceptible of removal. Influenza, catarrhs, rheumatism, diarrhea and diseases of the digestive system, vaccination, and injuries were responsible for the high rate. Fort Hamilton, N. Y., followed with a rate of 2,329.32, occasioned mainly by influenza, catarrhs and tonsilitis, diarrhea, and injury. Here, also, venereal and alcoholism were not excessive, viewed from the standpoint of the Army average. The rate at Fort Duchesne, Utah, was 1,676.33, due to influenza, diseases of the digestive system, and injuries. The excess at Fort Logan, Colo., where the rate was 1,588.55, was wholly due to the epidemic of influenza. These four posts, with the exception of Fort Duchesne, had high noneffective rates, that of Fort Logan being the highest, 76.98. On the other hand, some of the posts in this group combined good admission rates with rather high rates of noneffectiveness. Fort Yates, N. Dak., Fort Wallawalla, Wash., Angel Island, California, and Whipple Barracks, Ariz., are among this number.

As Fort Apache continues to hold the worst, so Fort Huachuca continues to present the best record among these seventeen posts: admission 601.94, noneffective 19.39. Fort Sherman, Idaho, takes second place, with 879 and 25.50, a gratifying improvement on its rates for the previous year, 1,838.24 and 44.15. Fort Columbus, N. Y., takes third rank, with 853.66 and 30.45. The others range in their admission rates from 1,000 to 1,300.

No death occurred at Whipple Barracks, Ariz., Fort Supply, Ind. T., or Fort Duchesne, Utah. The enormous rate of 59.23 was given by 17 deaths at Fort Logan, Colo.—12 from influenza, 1 from alcoholism, 1 from consumption, and 2 from injuries.

No discharge was made from Fort Columbus, N. Y., nor Fort Adams, R. I. The highest rate, 53.72, was furnished by 13 cases at Whipple Barracks—3 from syphilis, 2 from injuries, the remainder scattered among various diseases, among which was 1 from alcoholism.

(4) The thirty stations garrisoned by 100 to 200 men each had a mean aggregate strength of 3,936 men. Their average rates bear satisfactory comparison with those of the Army—admission 1,239.58, noneffectiveness 38.59, death 7.37, discharge 17.53.

Only four of these posts had an admission rate so large as to merit special notice. St. Francis Barracks, Fla., furnished the highest rate of any post of the Army, 3,121.50, the excess due principally to diarrhea, headache, and diseases of the digestive system and of the integument, vaccina, alcoholism, and injuries. Fort Barrancas, Fla., followed with 2,629.63, due to influenza, diarrhea, rheumatism, venereal, and vaccina. Jackson Barracks, La., came next with 1,771.43, due to malarial and venereal diseases, rheumatism, and alcoholism. Lastly the rate of 1,730 was furnished by Fort Canby, Wash., owing chiefly to influenza, diarrhea, alcoholism, and rheumatism. Fort Barrancas had the highest noneffective rate of any post in the Army, 103.33.

Ten of the thirty posts had admission rates of less than 1,000 per thousand of strength, and the remainder approached more or less to the Army average. Among the posts having low rates may be mentioned Fort Spokane, Wash., 696.77; Fort Warren, Mass., 702.97; Fort Buford, N. Dak., 792.68; Fort Brady, Mich., 801.72; Fort Niagara, N. Y., 808.22, and the Leavenworth prison guard, Kans., 816.51. Including Fort Barrancas, ten of the posts had higher noneffective rates than that of the Army and twenty lower rates. The lowest were furnished by Fort Brady, 16.89; Fort Niagara, 17.72; and Camp Poplar River, Mont., 18.85.

The highest death rate was at St. Francis Barracks, where 28.04 was furnished by 3 deaths; 1 typho-malarial fever, 1 liver disease, and 1 injury.

The highest discharge rate came from the guard at Leavenworth military prison, 45.87, caused by 5 cases; but Fort Wadsworth, N. Y., and Fort Davis, Tex., had each also 5 cases, and Fort McHenry, Md., and Fort Thomas, Ky., 6 each, although the larger garrison in each of these instances gave a lower rate than was furnished by the prison guard.

(5) The forty-seven small stations, garrisoned each by less than 100 men, had an aggregate strength of 2,294 men. Their average sick rates were considerably below those of the Army, their death rate somewhat higher.

It is hardly worth while to speak of the rates of these posts individually, because a few cases more or less make such a considerable difference in them. With few exceptions their record of health for the year may be considered satisfactory, as for instance, Fort Schuyler, N. Y., with 94 men, 797.87 admission rate, and 29.81 noneffective; Benicia Barracks, Cal., 90 men, 933.33 and 24.14; Fort Randall, S. Dak., 82 men, 1,000 and 31.67; Fort Bennett, N. Dak., 81 men, 617.28 and 19.61; etc. The exceptions are Fort Thomas, Ariz., 58 men, admission rate 1,810.34, with the noneffective only 33.59, the excess of cases due to malarial fevers, diarrhea, rheumatism, diseases of the eye, colic, and constipation. Camp Eagle Pass, Tex., 52 men, 1,788.46 and 49.21, due to malarial fever, diarrhea, and alcoholism. Camp Oklahoma, Okla., 51 men, 1,666.67 and 48.56, due to influenza, malarial, and venereal diseases, and diseases of the eye and the integument. Camp Pena Colorado. Tex., 46 men, 1,695.65 and 29.42, due to influenza, alcoholism, headache, and rheumatism. San Diego Barracks, Cal., had a small admission rate; its noneffective rate of 90.15 being due to patients from other posts sent, as already stated, to derive benefit from its equable climate.

Of all our military stations St. Francis Barracks, Fla., had the highest admission rate, 3,121.50 per thousand of strength; Fort Barrancas, Fla., comes second; Fort McPherson, Ga., third; followed in order by Fort Apache, Ariz.; Fort Hamilton, N. Y.; Fort Reno, Okla.; Columbus Barracks, Ohio, and Fort Robinson, Nebr., all having an admission rate of over 2,000.

Fort Barrancas had the highest noneffective rate, 103.33; San Diego Barracks comes second, with 90.15, although, for reasons already stated, it should be dropped from consideration, and this place given to Columbus Barracks, Ohio, with its 77.13 per thousand of strength constantly sick. Fort Logan, Colo., Jackson Barracks, La., Fort Apache, Ariz., and Fort McPherson, Ga., follow in order of lessening rates.

To watch the changes in the sick rates of our military posts from year to year forms an interesting and instructive study. Sometimes the sanitary reports throw light upon the changes, but as often they do not indicate the probable causes. Occasionally the mental character and methods of a medical officer make a considerable difference in the totality of a sick report. An officer strict in his views of what is right and proper may hold a man to duty who for the same indisposition might be taken on sick report by another officer of a more sympathetic character. Instances of changes in the sick reports of posts due to change in the medical attendance might be cited. When, however, increased prevalence of disease is manifested at a post throughout the service of many medical officers, the results of their personal equation may be regarded as neutralized, and the cause or causes of the increasing sick list must be sought for elsewhere. By way of illustration, the two posts of Fort Apache, Ariz., and Fort Hamilton, N. Y., have for several years back been becoming gradually more and more unhealthy, and the sanitary reports do not clearly indicate why. Special investigation in such cases is needful and will hereafter be undertaken.

THE PREVALENCE OF SPECIAL DISEASES.

SPECIFIC FEBRILE AND ACUTE INFECTIOUS DISEASES.

These diseases held high rates during the year, chiefly owing to the recrudescence of the epidemic of influenza. The admission rate was 149.04 per thousand of strength, but when the cases of influenza are deducted there remains only 16.37, of which 10.32 was due to measles and mumps, and 3.95 to typhoid fever.

Cerebrospinal fever.—Only 2 cases of this disease were reported, both fatal, one from the field in the Department of the Platte, the other at Angel Island, Cal.

Dengue.—One case was reported from Fort McIntosh, Tex.

Chicken pox.—Sixteen cases among the troops of nine posts. The disease appeared first usually among the children and from them spread to the soldiers.

Smallpox occurred at five posts, 1 case at each. The measures adopted by our medical officers, isolation of the patient, immediate vaccination of those exposed to the infection, as also of all those whose vaccinal protection was considered doubtful, with thorough disinfection during the progress of the case and after its termination, had the desired effect of restricting the disease to the individual who imported it into the garrison, except at Fort McIntosh, Tex., where 2 cases of varioloid were developed.

The only abnormal results of attempts at vaccination were reported from Whipple Barracks, Ariz. Fifty men belonging to the Indian company were taken on sick report, 20 of whom were treated in hospital. In 8 cases the lesions were particularly severe; extensive ulcerations, sloughs, and metastatic abscesses supervened with much constitutional disturbance. Whether these results were due to impure virus or to an exalted susceptibility of the Indian was at first uncertain until a successful and normal vaccination of the women and children with a different crust determined the cause.

Five cases of *diphtheria* occurred, 1 at each of five posts, without any spread of the disease to the families. In one instance, Columbus Barracks, Ohio, it spread from a family to a member of the hospital corps who had been assisting in nursing. Three children of six affected died. The disease was contracted in the city by one of the children. At Frankford Arsenal four children of one family succumbed to the disease and one child of another family became attacked but survived; two cases resulted favorably at West Point, N. Y., and one at Fort Buford, N. Dak.

Scarlet fever.—Three cases, not fatal, occurred among the troops, one each at Fort Logan, Colo., Fort Leavenworth, Kans., and Vancouver Barracks, Wash. At the first-named post one case in the family of an officer was contracted in the city of Denver, Colo. Children at several other posts became affected but in every instance the restrictive measures were successful. One case was reported from each of the following posts: Fort McHenry, Md., Washington Barracks, D. C., Rock Island Arsenal, Ill., Fort Clark, Tex., Fort Niobrara, Nebr., and Fort Yates, N. Dak. Two cases were reported from Fort Supply, Ind. T., four from Fort Wayne, Mich., and seven cases restricted to two families from Boise Barracks, Idaho. Strict quarantine and measures of disinfection were enforced at all these posts with manifestly successful results.

Measles.—The recruiting depot at Columbus Barracks, Ohio, furnished more than one-half of the cases reported among the men, 93 out of a total of 180. Davids Island had 14, but singularly enough no case was reported from Jefferson Barracks. Nine posts had 1 case each, two posts 2 each, four 3, three 4, two 5, two 6, two 7, one 14, and one 93. At Columbus Barracks the epidemic began among the recruits with four cases in February. The disease did not subside until the return of warm weather. At Fort Wingate, N. Mex., where 7 cases occurred, the disease was introduced by a soldier from Camp Lowell, Ariz., who no doubt contracted it while en route. At Fort Supply, Ind. T., whence 5 cases were reported, besides 3 cases among the children, the disease was brought to the post by a soldier who had been on furlough. At Fort Myer, Va., 3 soldiers and 7 children became affected. Fort Wayne, Mich., which reported but one soldier affected, had 7 cases among children of officers. Two posts into which the disease was introduced had no case of the disease among the men; Fort Schuyler, N. Y., had 2 cases in the family of an enlisted man, and Fort Bliss, Tex., had 9 cases contracted in the public schools of El Paso. The disease does not appear to have been fatal in any of these cases.

Sixty cases of *mumps* were reported from thirteen posts. Columbus Barracks had 33 of these coincident with its epidemic of measles. The other cases were scattered at various posts.

Two cases of *whooping cough* were reported, one at Fort Thomas, Ky., and the other at Benicia Arsenal, Cal. Besides these cases there occurred among children 3 at Fort McHenry, Md., 2 at San Diego Barracks, Cal., and about 27 at Fort Sill, Okla. The origin of the disease at this last post seems to have baffled all inquiry. The family first affected had not been out of the post for six months and there was no whooping cough among the children of the settlers and wood choppers of the vicinity Ultimately the infection was assumed to have been introduced by some of the peddlers of vegetables from the Chickasaw Nation, who generally have several of their children in the wagon with them.

Enteric fever.—Ninety-two cases were reported, giving 3.95 rate per thousand of strength as compared with 5.24 in 1890, and 5.17 in the previous decade. Twelve deaths and two discharges resulted from these attacks. As they were distributed among thirty-six posts the cases must be considered as sporadic rather than as constituting a local epidemic at any one post. Fort Myer, Va., had 15 cases; Fort Douglas, Utah, 9; Fort Reno, Okla., 7, while the remaining 61 were scattered at various posts, no one of which had more than 4 cases. Concerning the cases at Fort Myer, Maj. R. H. White remarks:

> During the three years of my service here a continued fever has appeared in August and September that has given an aggregate of 87 cases and implied a total loss of 1,388 days of service. This fever is uninfluenced in its duration by quinine, and may be safely called typhoid, and for this reason the opinion is ventured that the sanitary condition of the post may be improved in respect to its subsoil and surface drainage, and to its water supply. To bad drainage and impure water the causation of typhoid fever is referred by the highest authority, and it is obvious that heavy rainfalls remain stagnant here too long. and that the water supply is of surface origin and taken from the immediate vicinity of the cemetery. The fever in question is preventable and should be prevented.

There seems to be no doubt that where the subsoil water is high malarial fevers predominate, and that where improvements have lowered the ground-water level to a certain extent the malarial fevers are replaced by typhoid with or without an intermediary typhomalarial stage. Fort Myer seems to have reached that stage of its history when typhoid has superseded the malarial remittents that twenty years ago prostrated the men who then garrisoned that site under its old name of Fort Whipple. A good system of underdrainage would no doubt put an end to the autumnal fevers at Fort Myer.

Capt. J. L. Powell furnishes an interesting report of 5 cases at Fort Randall, S. Dak. Two of these were undoubted importations from Fort Douglas, Utah; one was in the person of a hospital corps private on duty in the ward with these men, the fourth occurred by contact with the first during convalescence, and the last in a boy who carried the soiled linen to the laundress.

> FORT RANDALL, S. DAK.—*Capt. J. L. Powell:* By reference to the register of patients for the months of August, September, October, and November, it will be seen that during that period there occurred at this post five cases of typhoid fever, four of which were among the enlisted men of the command.
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> The first case was that of Musician William Boll, æt 24, of F Company, Twenty-first Infantry. He was admitted to hospital on August 23, three days after the arrival of his company at this post from Fort Douglas, Utah, where it had been stationed eight months. He was discharged cured, on October 1, after a comparatively mild attack. This man states that he had been feeling badly for some time before leaving Fort Douglas, and that on the second day out, while on the train, he had a headache and stiff neck and felt hot and cold alternately.

The next case was that of Private James E. McAvoy, æt 24, of the same company. The premonitory symptoms in his case were about the same as in Boll's, but, though he had been ailing for some time before he left Fort Douglas, he did not come up on the morning sick book until September 10, when he was admitted to hospital.

The third case was that of Sergt. Louis T. Deichmann, æt 29, of H Company, Twenty-first Infantry, which constituted a part of the command en route from Fort Douglas. He was admitted to hospital October 28, 1891. In its clinical aspects this case presented more features of interest than either of the others. For about twenty days prior to his admission this man had been ailing, but it is evident that the disease had passed the stage of incubation and invasion before he was taken into hospital, as his temperature was 102.8° at the time. Towards the end of the first week and through the second he was very ill, his highest temperature was 106.3°. There was active delirium, while dry, thick sordes covered his lips, teeth, and tongue, and there were involuntary evacuations of the bowels and bladder in the bed. On the night of November 2, six days after his admission, he had a violent hemorrhage from the nose which threatened to be fatal, but which was finally checked by plugging the nares. On the 4th it again became threatening and required additional packing of the nasal passages.

The fourth case was that of Private William Dorsey, Hospital Corps, æt 28, admitted to hospital November 1. He was in charge of the ward when Boll was taken sick, and nursed him, and also McAvoy, until September 19, a period of twenty-eight days, when he was relieved by another nurse. His was a mild case from beginning to end.

While temporarily absent from my station the first patient, Musician Boll, was treated and discharged from the hospital by Capt. Freeman V. Walker, so that I can not speak from personal knowledge of the clinical aspects of this case. In the other three cases the characteristic rose-colored eruption was common to all, and in the case of Sergeant Deichmann it was very abundant. In none of these cases, save one, that of Private Dorsey, could a typical temperature curve be looked for, as in the beginning they were all modified by some mode of treatment. Boll and McAvoy had cold baths, antipyrin, and quinine, at different times. Deichmann had two doses of antipyrin, 15 grains each, at two hours interval, in the evening of the day he entered hospital, when his temperature had risen to 105.2°. On October 30, his temperature being 106.3°, the same doses were repeated. On November 1, to relieve severe headache and induce sleep, he got 15 grains bromide potash and 10 grains chloral. Aside from this his treatment was nourishing and expectant, consisting of milk punch, milk and egg beaten up together, and beef tea according to directions. Dorsey's treatment was entirely nourishing and expectant throughout.

It is thought that what has been stated in general terms of the clinical aspects of these cases, will be amply sufficient to identify the disease and establish the absolute correctness of the diagnosis. I pass on then to a consideration of their origin, the point of greatest interest, inasmuch as upon its determination rests the question as to whether anywhere in or about Fort Randall exists a focus of infection for the typhoid poison. A very superficial examination of the foregoing histories will, I think, be sufficient to show that the fever was brought here by the command that came from Fort Douglas.

It will be observed that Boll had been in the post but three days before he was taken on the sick report. McAvoy was here from August 20 to September 10, an interval of twenty-one days before he reported sick. It should be noted, however, that the first observation of his temperature showed it to be 103°.

The determination of the exact date of infection and the date of the commencement of the disease are alike matters of great difficulty, but any man who presents himself with a temperature of 103° would ordinarily be set down as well out of sight of the stage of incubation. Liebermeister says that Lothholz, who worked under Gerhardt's direction, observed in the epidemic which occurred in the neighborhood of Jena that the average period of incubation was three weeks; the shortest period eighteen days; the longest twenty-eight days. Within this limit it is easy to find a place for McAvoy. I therefore think the conclusion is inevitable that both these men (Boll and McAvoy) contracted the seeds of the disease before their arrival at this post. The very nature of Dorsey's duties will at once suggest the origin of the disease in his case. With Sergt. Deichmann, however, it is different. He was not admitted to hospital, as stated, until October 28, two months and eight days after his arrival at the post. Allowing the widest range for probabilities, his case can not be brought within the limits given by Lothholz, thereby excluding the possibility of his having contracted the disease outside of Fort Randall. It becomes necessary, therefore, to widen the field of our investigation in search of a new focus of infection. What and where was it? Infection from the drinking water at this post may safely be excluded. It is the same that has been used for years, is brought from the Missouri River in water wagons, and when the suspended matters have subsided is of very good quality. There is no communication by open or closed sewer from the post to the river. Neither from the records here nor from persons who have resided here or in the vicinity longest can I learn of a case of typhoid fever having occurred at Fort Randall before. In further confirmation of the view already expressed, it is to be borne in mind that G Company of the Twenty-first Infantry, under orders to change station, arrived at this post from Fort Sidney, Nebr., on the 22d of May last. The sick list of this company has been exceptionally small, and not a single case of fever of any description has so far made its appearance in the company since its arrival here. It occupies barracks just across the parade ground from the other two companies and about 100 yards distant.

The hygienic and sanitary surroundings of these three companies, the one arriving in May and the other two in August, with reference to food, water supply, and barracks, are as nearly identical as they could well be, and all excellent. This is a highly significant fact in connection with the origin of the cases that have been under treatment. With this, I think, it has been demonstrated, whatever may have been the vehicle of infection in Boll's and McAvoy's cases, that a polluted water supply must be entirely eliminated as a medium of conveyance for the typhoid poison in Deichmann's case. A searching investigation furnishes but one other possible clew. About one week, as well as I can ascertain, before Boll was discharged from hospital he went over to the barracks of H Company, and from the rear balcony for some two hours or more witnessed the progress of a game of baseball. He was with Deichmann a great deal of the time, went into the barracks with him, and had from him the loan of some books to read while on sick report. If it is maintained that Deichman contracted the disease in Douglas it would be giving to it a stage of incubation much longer than any ever previously recorded, so far as I have been able to ascertain from the literature on the subject. On the other hand, while both Liebermeister and Niemeyer (the former a pupil of the latter) speak of it as a miasmatic, contagious disease, Liebermeister distinctly states that typhoid fever is never transmitted directly from person to person. Niemeyer takes the opposite view, and to quote his own words says: "Some physicians still doubt the contagiousness of abdominal typhus, or at least consider it as not proved; but such views must not be brought to the bedside of the patient. Here the fact that the noncontagiousness has not been proved must make us act as if its contagiousness had been demonstrated. The sick should be isolated from the well, and only those attendants required in caring for the patient should be allowed in his vicinity."

Even if we accept Niemeyer's view it might be suggested that Boll was too far recovered from the disease to communicate it to Deichmann, but it could not in the present state of our knowledge be positively asserted. Whichever way we look we are confronted by difficulties which very much militate against the formation of a positive opinion.

The next case to be considered is that of John Cassidy, a youth 17 years of age, the son of the hospital matron. I was called to see him on October 9. I found him and a younger brother (Andrew), aged 14, sick in the same bed. Both had been ailing pretty much the same way for two or three days, feeling chilly, then feverish and weak, with poor appetite and headache. I had no suspicion of any acute infectious disease in either case, but thought they had mild malarial attacks due to working in a low bottom under the rays of a very hot sun. I accordingly directed 3 grains hydrarg. cum creta for each at bedtime, and 3 grains of sulphate quinia every three hours. The next day the quinia was continued, and in addition each got 10 grains of antipyrine, which was repeated in two hours, to reduce temperature. Under this treatment Andrew was out and at work by the 14th. John, however, did not improve, and on two evenings his temperature went up to 105°. I then increased the quinia to 6 grains three times a day, and gave antipyrine pro re nata, but his headache continued severe, his tongue had a thick brown coating, he had no appetite, and there was a slight cough bronchial in character. On the third day after taking to bed he had some nose-bleed, and on the seventh two or three lenticular rose-colored spots made their appearance on the abdomen just below the ribs.

Whatever may have been the original character of the foregoing case, certain it is that before it proceeded very far some of the most important diagnostic features belonging to the clinical history of typhoid fever developed themselves. The boy was sick from October 9 to October 25, a period of but seventeen days. There was no period of convalescence, and his recovery was as abrupt as was the onset of the disease. It did not yield to the quinine treatment, differing in this respect from his brother Andrew. The mode of life of these two boys had been identical for months. They worked together in the same field, they ate the same food, drank the same water, and slept in the same room. That Andrew's was a malarial attack pure and simple is shown not only by the fact of his prompt recovery under the quinine treatment, but by the further fact that on October 28, just two weeks after returning to work, he had another seizure, and under the same treatment recovered even more promptly than he did from his first attack.

But we now come to the essential facts. During the illness of the typhoid patients at the hospital these two brothers alternately came for the bed linen on Mondays and brought it back on Friday or Saturday. Neither one of them ever came near the persons of the sick men, but they got the hamper of clothes out of the wash and bathroom, which opens immediately into the ward.

I wish to invite special attention to the fact that the clothing which these boys had to handle up to the beginning of their own illness was that used only by Boll and McAvoy, and consequently was not stained by any excrementitious matter, as neither of these men had any involuntary discharges from bowels or bladder during their sickness. Granting, then, that the foregoing clinical history in the case of John Cassidy shows unmistakable evidence of typhoid infection, and I think there can be no doubt of it, to my mind there is a striking analogy between the circumstances under which it is at all possible to account for its mode of conveyance in his case and that of Sergt. Deichmann. But why Deichmann should be the victim while his comrades escaped, or why Cassidy was the victim while his brother and the other members of the family escaped, are problems which must be left unsolved until we have further knowledge of the nature of the *materies morbi*.

At most of the posts affected with typhoid fever nothing is said as to its origin, which in the present stage of our knowledge of prevention is the most important point to be investigated. In a few instances in which remarks are made suspicion is thrown in a general way on the water supply if the case can not be conclusively established as having been contracted during absence from the post. As an instance that eternal vigilance is the price of safety in the case of infectious diseases the following extract may be given. The dejecta of a single patient passing undisinfected into the soil may be the cause of a dangerous outbreak.

FORT LOGAN, COLO.—(*Maj. R. M. O'Reilly.*)—I would also respectfully invite attention to the fact that one of the employés at the pump house is suffering from typhoid fever. The dejecta from this patient are thrown into a sink without disinfection, thus dangerously polluting the soil. I would therefore recommend that the sink into which the dejecta of this patient are thrown be burnt out and filled in, and that steps be taken to disinfect the dejecta, for which purpose disinfectants can be furnished by me. A separate sink should be dug for the sole use of this patient.

In comparing the rates of these specific febrile affections in our Army with those of foreign armies, Great Britain and Italy had less diphtheria than we had, but Germany had a great deal more. There is, however, a good deal of uncertainty concerning the character of the cases that are returned under this heading. We had much less scarlet fever than they had. A trace of smallpox poison appeared in all. The British had less enteric fever than we had, the Germans as much, and the Italians more, while a trace of typhus was shown among the British and Italians, but none among our troops or those of Germany.

Influenza.—The total number of cases reported was 3,087, of which 22 were fatal; average duration of each case, 6.9 days. The disease appeared at the same time at widely separated posts. Thus in January it was reported from Fort McPherson, Ga., and Whipple Barracks, Ariz.; in February from Fort Sherman, Idaho, Fort Missoula, Mont., and Fort Logan, Colo.; in March from Fort Wayne, Mich., Fort Monroe, Va., Fort Sidney, Nebr., Fort Wingate, N. Mex., and Fort Thomas, Ky.; in April from West Point, N. Y., and Fort Mackinac, Mich. It subsided during the warmer months, but reappeared in November and December. Accepting a germ theory, the above facts would indicate a recrudescence of the disease from the germs of last year, as was the case with the yellow-fever epidemic of 1879. At the same time they militate against the theory of a meteorological causation, for the climatic conditions of this country are not localized as were these epidemics. The cold waves of the months of January, February, and March sweep over the country from the Rocky Mountains to the Atlantic.

At some posts the cases were milder, at others more severe, than those of 1890. A few extracts are given to show the character of the disease, among others an excellent report on its symptomatology, treatment, and etiology, by Capt. Chas. E. Woodruff, stationed at Fort Missoula, Mont.

FORT McPHERSON, GA. (*Maj. J. C. G. Happersett*).—An epidemic of influenza of severe form has prevailed at this post during nearly the entire month of January. The type of the disease is much more severe and the continuance of the cases prolonged compared with those of the preceding year.

Maj. P. J. A. Cleary.—The cases of death during the month (December) were sudden. Both were on sick report for epidemic catarrh. One was in hospital for several days, apparently doing well. On leaving his bed one night he fainted and soon expired from heart failure. The other was treated in quarters and was but one day on the sick report. He died of apoplexy. Of the number taken sick, 60 were cases of epidemic catarrh and 14 of common catarrhs, bronchitis, and allied affections due to climatic causes.

WHIPPLE BARRACKS, ARIZ. (*Maj. B. F. Pope*).—In January there occurred a considerable number of cases of catarrhal fever in Company H, Ninth Infantry. The disease resembled "la grippe," which was epidemic last year, but it lacked several essential symptoms. Fever, headache, marked muscular pains, and slight sore throat were common, with but little catarrh, nasal or bronchial. The attack usually lasted twenty-four hours, and was promptly controlled by antipyretics.

FORT LOGAN, COLO.—*Maj. R. M. O'Reilly* reported on February 19 that the garrison was suffering from an epidemic of influenza of a serious type. On the 23d he recommended that company commanders direct their men to report to a medical officer at once on the occurrence of a chill or chilly sensations, cough, pain in the chest, sore throat, or headache, as experience had shown that cases of the prevailing epidemic were much more manageable when treatment was begun in the earliest stages.

In November he reported: Epidemic influenza has again appeared at the post; this time, however, in a mild and manageable form. During the month there were 13 cases, in only one of which was there any serious complication. Of those who have returned to duty the average duration of the disease has been 7.6 days, the longest 13 and the shortest 2 days.

FORT WAYNE, MICH. (*Maj. John H. Bartholf*).—March: Epidemic influenza appeared on the 23d, and there have been thus far 18 cases among the soldiers and 5 among the women and children. All the cases have as yet been mild.

Maj. H. R. Tilton.—April: There were 9 new cases of influenza during the month. The last case was returned to duty on the 20th instant.

Capt. W. H. Corbusier.—December: Epidemic influenza has appeared at this post. Most of the cases have been mild, but a few of the adults are having severe attacks.

FORT MONROE, VA. (*Maj. C. E. Munn*).—The sick report for March has been increased largely by an epidemic of influenza, which affected 15 officers, 16 enlisted men, and 29 women and children. No case of pneumonia or other serious complication was developed. The atmospheric conditions have been unfavorable. Damp, cloudy weather, with rain, continued for many days.

Maj. R. S. Vickery.—December: An epidemic of influenza or grippe increased the sick report for some days. At first the disease was of a mild character, but in the last few days some more severe cases have appeared.

FORT SIDNEY, NEBR. (*Capt. L. S. Tesson*).—Epidemic influenza, or catarrh, which fortunately did not reach us last year, made its appearance during March. Its visit was of short duration (from the 16th of March until the 8th of April), and on the whole quite mild in character, the majority of patients being incapacitated but a few days. It was complicated with lung troubles in only four cases, two of pneumonia terminating favorably, and two of capillary bronchitis, both fatal. It is but fair to state, however, that both of these cases were completely prostrated from the effects of a prolonged debauch at the time that they were stricken with the disease.

The symptoms in the main were intense headache of a congestive character, pains in all the limbs, the back, and groins, and a temperature of about 103° of thirty-six or forty-eight hours' duration, and in many cases after convalescence was established a severe pain in the region of the spleen, which frequently lasted over a week. The tongue was generally clean and the bowels natural in character and action. Great prostration followed in all well-defined cases.

The first case appeared in an officer recently returned from Omaha, Nebr., where the disease was prevalent, and the second in another officer who was much in the society of the first. The last case during the existence of the disease as an epidemic occurred April 6. One case occurred on the 9th, 2 on the 12th, and 1 on the 20th, all of which were very mild. Less than one-fourth of the command were affected.

Fort Hamilton, N. Y. (*Maj. Ezra Woodruff*).—Influenza has greatly affected the command during the present month, the first case appearing about December 17. Up to date 60 cases have been treated; of these 17 remain under treatment. The symtoms were frontal headache and pain in the back and in the bones of the lower extremities; many had a bronchial irritation or catarrh. None of the cases have been very severe.

Leavenworth Military Prison, Kans. (*Lieut. Col. J. P. Wright*).—During the past month (December) there has been an unusual amount of sickness here, both among the members of the provost guard and military prisoners, due to the prevalence of epidemic catarrhal fever or "la grippe." Prisoners employed in the interior of the prison, the shops, dining rooms, kitchens, etc., seem to have been especially liable to the disease; the number of cases occurring among this class has been greater than among such as were employed in the open air. The clinical history of these cases is almost identical with that of the cases which occurred during the two previous winters. There has been an initial chill, followed by a sharp rise of temperature, with coexistent catarrh of the bronchial or gastro-intestinal mucous membrane, generally accompanied by tonsilitis or pharyngitis; headache, anorexia, and malaise; pain in the back and limbs, and occasionally severe neuralgic pains of a wandering character. The attacks were generally followed by great debility and weakness for some days or weeks after convalescence was established. In a few cases the febrile symptoms were greatly predominant and persistent, the rhythm being such as is observed during the first week of enteric fever. Only in one case was there intercurrent pneumonia. The disease has been prevalent among the families to some extent, but not to the extent of former epidemics

Fort Mackinac, Mich. (*Lieut. H. E. McVay*).—April 2, 1892, an epidemic of *la grippe* began, which for two weeks greatly interfered with the duties of the garrison. Similarly to the epidemic of 1890, it began in the lower or ground floor, Company C quarters, and prevailed therein a week before it invaded the second floor, Company D quarters. Thence it spread to the quarters of the noncommissioned officers and married men, but did not prevail therein to any great extent. The epidemic was at its height on April 8, and the last case reported on April 18. Company C had 38 men on sick report, and several more under treatment. Company D had but 13. Reasoning from the above facts the conclusion is obvious that the unfavorable location, inferior means of ventilation, and faulty construction of Company C's quarters, concerning which many adverse reports have been made, are in a great measure responsible for the severity of the disease in that company. None of the cases proved serious and no complications arose.

Fort Missoula, Mont. (*Capt. Charles E. Woodruff*).—Though the first case that from its symptoms could be actually called influenza occurred February 16, there were before this date, and as early as February 1, several obscure cases of malaise, rheumatic pains, headaches, etc., accompanied often by "colds," and often diagnosed as "grippe" by men who read the Eastern papers. At first I refused to acknowledge that any of the cases were actual influenza, and though the cases occurring after February 26 were definitely called influenza, they were apparently sporadic, and it was not until March 6 that it was certain that we were in the midst of an epidemic. The first cases occurred among the soldiers.

In most cases an inflammation of some portion of the respiratory tract was developed, usually after the pains had begun; in a small number the "colds" were noticed first. In only two cases was there coryza; in only one sneezing. It was this absence of coryza that first threw doubts on the diagnosis of influenza. The other cases were equally divided between pharyngitis and bronchitis.

In children the attack came on with marked suddenness; the child might have been entirely well, yet in half an hour it would lose all spirit and lie moaning in bed or in its nurse's arms. Generally they were not peevish or fretful, but rather the opposite, and the intense desire to lie still might have been caused by a general soreness similar to that experienced by adults.

The headache, which was almost universal, was severe, persistent, bursting; it was found often in the temples, over and in the eyes, and in a large number in the back of the head. A few complained bitterly of this pain and paid no attention to their other symptoms.

The pains were often in the muscles of the back from the coccyx to the head, but a large number, probably 80 per cent, were tortured by pains throughout the whole body. The character of this pain is very difficult to describe; it was not a soreness, nor a rheumatic nor neuralgic pain, nor a bruised sensation, nor in the bones of the joints; paradoxical as it may seem, it was each and all combined; the colored people unwittingly described it as well as could be—it was "a misery." No position or attitude gave an instant's relief; many groaned and cried out, and the suffering women were nervous and in tears. The pains were uniformly thirty-six or forty-eight hours in duration, a few cases recovering in less time. The subsidence of pain left the patients prostrated. For so short an illness the weakness was phenomenal, but strength was rapidly gained, and in a week most cases were as strong as ever; only those having complications were more than ten days in recovering their usual vigor.

In two children and about six men a singular, and at the time alarming symptom was very noticeable, namely, a strong tendency to spasm of the muscles of the back of the neck. They lay on the side with the head drawn well back and chin elevated. In these cases there was fortunately nothing besides pain and fever to further obscure this symptom. They were quiet, uncomplaining, and indeed somewhat stupid. Cerebro-spinal meningitis was thought of, so marked was this one symptom. Each of these cases made a rapid, uneventful recovery.

A nervous symptom occurring in children was so pronounced as to alarm the mothers very much, and quite needlessly. In each of the eleven children attacked there was a strong tendency to somnolence. Two children slept nearly forty-eight hours, waking every two or three hours for nourishment, but immediately falling to sleep. The fever was only moderate, and there was in the worst cases of this symptom nothing to account for it. In thirty-six or forty-eight hours this stupidity would leave and the children quickly recovered their usual spirits. Though this symptom was chiefly confined to children, it was noticed in many adult negroes also. There was no delirium in any case excepting in one having pneumonia.

The temperature might be considered under the head of nervous symptoms. The cases of pure inflammation of the air passages had the usual slight increase which is always found in these affections, and no importance was attached to this slight fever. In the cases called influenza there was invariably an amount of fever which was in proportion to the severity of the case; it arose coincidently with the pains, and usually lasted somewhat longer than the pains, but the temperature was normal by the fourth day. Temperatures of 99.5° to 100.5° were frequently seen, but in no case excepting the pneumonias was it over 102.5°, or possibly 103° for a short time. More temperatures of 102° were noticed than any other degree. The children affected were only slightly feverish, 99½° to 101°, and pulse slightly accelerated.

A few cases of great diaphoresis occurred, chiefly at night, but they were so few as to be considered only accidental.

The pharyngitis was intense, caused considerable suffering, and yielded very slowly to treatment. In some cases the suffering seemed more than the condition of the throat accounted for; in only a few cases did it respond rapidly to treatment; the least time of a severe case was three days and the greatest about two weeks. The throat presented the usual appearances of pharyngitis, but occasionally the membrane assumed a purplish hue, which I have never seen before in this affection. There was no swelling, no exudation, merely a violent congestion. In one case of follicular tonsillitis, complicating a general pharyngitis, a diphtheritic membrane spread over each tonsil. It is probable that this was diphtheria, and for the safety of the garrison it was so considered.

When bronchitis occurred the cough of the congestive stage sometimes commenced before any other symptom, but usually not until the second or third day, or even later. The one noticeable and almost universal characteristic of the cough was its exasperating, irritating, and persistent uselessness. At first the tickling sensation in the throat caused painful and exhausting coughing, and after secretion began to be established the cough could not dislodge it. The secretion seemed to be adhesive, and though the patient could feel it moving or rattling in the tubes the most persistent efforts failed to bring it up. It was this exasperating nature of the cough which brought out the most complaints. In the majority of the cases the expectoration became more fluid and more easily detached, but the cough continued invariably after all the other evidences of bronchitis has disappeared. Suppurative otitis occurred in two cases and presented nothing worthy of notice.

Nothing occurred in relation to the digestive system among adults that is of any importance. One or two had slight diarrhea.

Among all the children who had symptoms of pain and prostration there occurred on the first day or the second a copious loose movement of the bowels containing considerable mucus. This was the almost invariable rule, with possibly but one exception, whether the bowels moved naturally or as the result of a laxative, and whether or not the child had symptoms of congestion of any portion of the respiratory mucous membrane. Beyond one or two of these stools no other sign of intestinal inflammation showed itself, and the child was in one or two days as well as ever in this direction.

No skin eruptions whatever appeared either among white or colored people.

There occurred five cases of pneumonia among the adults in the post and two in the vicinity. The pneumonia was croupous, but markedly different from the affection as usually seen. Four in the post and two outside were remarkably light in all respects; only one, fatal, was severe. In the light cases constitutional disturbance was slight, fever not going above 103°, usually 101½° or 102°. Rusty or blood-streaked tenacious sputum was expectorated by the second day, quickly changing, in all but one case, to a whitish frothy muco-pus. The consolidated area presented marked variations. In each case there was but part of a lobe affected. It was chiefly the left lung, and there was a band or zone of consolidation about 2 inches thick and about 2 inches above the base. In three cases the signs were found posteriorly, and yet anteriorly no adventitious sounds whatever could be heard. In one an area of consolidation 2 inches wide across the right chest, inclosing the nipple, was very marked, but posteriorly every sound was normal. This consolidated area presented throughout the disease all the signs of lobar pneumonia in its various stages, excepting that it was apt to give more marked bronchial breathing and increased vocal resonance than the dullness would account for. Broncho-pneumonia might present these symptoms, but this disease can be excluded because of the total absence of a primary bronchitis, and the fact that though it was secondary to a disease similar to influenza there were none of the usual precursors of broncho-pneumonia. The rusty sputum is very rare in broncho-pneumonia, and the post-mortem examination of the fatal case showed typical lobar pneumonia of the whole of the right lung and middle portion of the left lung; the left lung presented, antemortem, all the signs found in the other cases. On the other hand the physical signs in any one case were apt to vary from day to day much more like broncho than lobar pneumonia, and the temperature, in all but two cases, did not present a well-marked crisis but only a resemblance to a crisis. The rusty sputa may have been nothing more than an evidence of the same kind of intense congestion which characterized all the cases of inflammation, the blood vessels, from the extreme tenuity, exuding blood into the smaller tubes or air cells; indeed one case has been definitely called broncho-pneumonia on account of the limited area, its anterior position, the absence of rusty sputa, the absence of the usual signs of lobar pneumonia, and the fact that it was developed in a case of severe bronchitis. It is extremely probable that the cause of the pneumonia is entirely different from the causes either of lobar or broncho-pneumonia, as will be discussed under the head of etiology.

The treatment of the various complications offers nothing of importance. The pharyngitis was treated with hot water and astringent gargles, spraying with vaseline and cold or hot applications to the throat, particularly if any tendency to laryngitis existed. Feverishness was relieved by aconite, particularly in the young, and restlessness by bromide of potash, sometimes in combination with chloral. In all the cases of fever and pains, with or without the complications, it is not probable that treatment shortened the affection in the least. Cases without treatment lasted just as long, but suffered more of course. A large number of cases presented only these two symptoms, and antipyrine, seemingly fitting so nicely, was tried with success. Five grains every hour or half hour often gave great relief after four to eight doses were taken; in a few cases it had to be repeated, in some it only relieved the worst distress. When the fever was pronounced, but pains trivial, antifebrine was successfully given in the same doses. The largest number of cases were treated with salicylate of sodium, sometimes with aconite or bromide of sodium. This drug relieved the pains very greatly, as might be expected from their slight resemblance to muscular rheumatism; in some it seemed to cure the affection entirely. Dry heat applied to the body by means of water bottles or bags was always grateful to the patient, but not curative, as the pains were apt to return afterwards.

There was some evidence that the disease this year, whatever it may be, was contagious. In four houses the illness of the husband was followed by the illness of all the rest of the family, intervals of two to four days between each case. In only two of these four houses did the disease exist at the same time. In one house they were informed that the affection might be contagious, and the wife slept apart from her sick husband and escaped. Her baby had been on its father's bed and was taken ill with the disease. When a marked case occurred in one house other cases were expected.

Among the enlisted men the largest number came from one company, but there is nothing about this company, its barracks, discipline, or duty at all different from the others.

On the other hand, this evidence is not conclusive, for the cause, if capable of local zing itself, would affect all those in the locality, and if in one house, all in that house, those less resistant sooner than the others; and if the cause existed outside of the house it may have been carried in by the husband, cultivated, perhaps, and spread to the others. Though an opinion of value can not be formed from the evidence, it is probable that some of the cases this year were contagious.

The recital of the various facts in this epidemic naturally suggests the question, What disease has visited this vicinity? Was it influenza, a new disease, a mixture of diseases, a modified influenza, or an epidemic of "colds" such as are seen every winter?

A recrudescence of influenza is now being reported from various parts of the United States and of the world. Physicians are not sure it is influenza, and have been reluctant to call it such. This sickness undoubtedly resembles that disease more than any other, and for the sake of giving it a name, has been called such. But a study of the foregoing symptoms shows conclusively that it presents several marked differences from the epidemic of last year, as well as resemblances. That skepticism is justifiable, its similarity to dengue is sufficient proof, and it is not certain that a single case of typical influenza has occurred; though of course many were so nearly like that disease, as far as distress of patient and his treatment are concerned, as to be called influenza for practical purposes. Again, the histories of previous epidemics do not, as far as I can learn, mention the reappearance of the disease the subsequent year. The inflammations of the respiratory mucous membranes were mostly intense congestions, affecting the pharynx and larger bronchial tubes, but not the larynx and nasal surfaces. The fever and constitutional disturbance were far less than last year; epistaxis was uncommon, and numerous cases had no signs of "colds."

From newspaper reports it is evident that Philadelphia has suffered from about the same affection that has been here, and it is believed that the diagnosis is somewhat doubtful there, also. From its resemblance to malaria, dengue, and influenza, it is called by newspaper accounts malarial-breakbone-influenza, and it is suggested that it is a new disease. In this case it is totally unnecessary to invent a new disease or imagine the existence of one, for besides the improbability of a new disease escaping the notice of thousands of brilliant physicians always on the lookout for one, it seems absurd to give a special name to a "cold," if many people have it, and call it simply a "cold" another time if only a few are exposed to the same conditions that the many were.

The suggestion that the affection was a mixture of diseases, though very improbable, can not be summarily dismissed. We know that several diseases may coexist, but it is clear that in this case, omitting the complicating pneumonia, there is no reliable evidence that there was a multiplicity of causes.

The suggestion that this is a modified influenza must be treated with more respect. A few germs left over from last year, prostrated by a hot summer, degenerated and weak, may have attacked the country, but no sweeping invasion of germs has taken place. The various parts of the country have been irregularly attacked as to time, and not successively from east to west, as would be expected; and, if I am not mistaken, a review of the whole country will show that with some exceptions the general trend of the affection has been from the west, a fact which, if true, is strongly indicative of the influence of meteorological conditions, for the great winter changes of weather almost invariably follow this course. Again, the intense nature of the localized congestions would favor the idea of the local action of living cause. Meteorological conditions would cause a more general congestion. The ideas are of course based on the supposition of influenza having having a living cause, an unproved premise, and therefore leading to a doubtful conclusion.

Flint's Practice of Medicine, page 398, edition of 1886, refers to an epidemic of pharyngitis in western New York in 1857, which to all appearances must have been exactly similar to the majority of the cases seen this year. In January or February, 1886, there occurred an epidemic in Philadelphia which was the same as the above. Being one of the victims, I have a lively recollection of the intense headache and prostration which existed, with a slight fever (101½°), for forty-eight hours before any throat symptoms developed, and how a sedative, a laxative, and an astringent gargle straightened matters out in less than forty-eight hours. There is scarcely a winter in a variable climate that an epidemic of "colds" is not seen; the favorite winter conversation in cities is the detailing of personal symptoms of the "colds in the head" from which all suffer; again, it is pharyngitis, again laryngitis or bronchitis, and occasionally it is pneumonia with its fatalities, and in some localities, in summer, it is enteritis or cholera morbus. It seems absurd to demand a microbe for each one of these epidemics. An inflammation of the nasal or pharyngeal mucous membrane can be caused in a hundred ways without the interference of the bacillus of diphtheria or the supposed germ of influenza, and similarly with all other affections of an inflammatory type. A general muscular soreness, with fever and headache, is a common winter occurrence after exposure to cold drafts while the body is wet with perspiration, and a germ is never dreamed of.

It is remarkably easy for meteorological conditions of moisture, temperature, pressure, winds, ozone, etc., so to alter the circulation in the capillaries as to cause violent congestion. Take the familiar example of mountain climbing. The great reduction of pressure causes such intense vascular dilatation that actual bleeding from the mucous membrane takes place, and the intense headache indicative of congestion is occasionally the forerunner of an apoplexy. The persons who come even slowly from the deep caissons of bridge building are affected with painful symptoms, which in some mild cases are but little different from cases in the epidemic of this year. From the physical laws of the compression of gases we know that under great pressure the fluids of the body contain much more gases than under low pressure, and when the outside pressure is relieved the gases will cause pressure within the vessels or will actually escape in bubbles. All the above cases of caisson disease can be fully explained under this law, even the severe cases where the pressure has so damaged nerve tissue that the nerve has never recovered its usefulness, and where the spinal cord has been damaged within its unyielding walls. It is to be remembered that the actual pressure is immaterial within certain limits provided that it is the same throughout and time is given for the adjustments. Experience has shown that if the workmen emerge slowly into lower pressure they are scarcely affected at all, and dozens, perhaps hundreds, of lives might have been saved if the practical application of the laws of pressure of gases in confined liquids had preceded this experience. Now, what objection is there to the dea that the mildest cases of caisson disease are repeated every winter when sudden barometic and other meteorological changes have suddenly altered the circulation? He who has "taken a cold which has settled in every muscle of his body" may be suffering from symptoms identical with caisson disease, and so may some of these cases this year.

The cold winds of northern climates impinging on the forehead cause such disturbances of circulation around the terminations of the fifth nerve that intense frontal neuralgia results.

Upon the approach of a cyclone all cases of chronic rheumatism, neuralgia, painful corns, and neuromata in the stumps of amputated limbs suffer severe twinges of pain, which become less as the storm center approaches and then decline. In the cases of neuromata these pains recur after the storm center has passed. Investigation shows that the outer ring of the cyclone constitutes a "neuralgic zone," and while the patient is in this ring pains occur; but while he is inside the ring nearer the cyclonic center or outside of it entirely, his pains cease. A more beautiful illustration of meteorological conditions causing pain could not be invented. The real agent in the case is unknown; but that it is chiefly due to changes of pressure is most probable from the fact that the barometer falls before the cyclonic center arrives and rises after it has passed.

Cold applied to the feet and legs may so change the whole circulation as to bring on violent metritis or enteritis or bronchitis. If great heat applied to the head will alone cause those dreaded and often fatal cases of sunstroke, and if cold alone will cause a general benumbing of the whole nervous system, it is surely reasonable to suppose that variations of temperature within these extremes will have some effect, however small, in producing variations of health.

A person going from a very moist atmosphere, as of a room, into a dry atmosphere outside of equal temperature, may have evaporation so marked from his body as to take a violent "cold," or even pneumonia.

Meteorological changes affect all alike, and if they have any effect at all it is exerted in an epidemic manner. The mere fact of the inflammation being of an intensely congestive type, though favoring the view of meteorological causes, is not conclusive; for certain germs, as of epidemic conjunctivitis, often do the same. In this matter it should be remembered that many capable physicians are not at all sure yet that influenza has a living cause or microbe. In the first place, cases like influenza occur every year, and it is only when many occur that a microbe is suspected. Again, all the symptoms can be accounted for without a germ, and one, if it does exist, has eluded all the searching efforts of thousands of skillful workers, a fact of much weight.

A curious and at the same time important fact in relation to the present epidemic is strongly indicative of the influence of meteorological conditions, namely, at each period of the two months a certain complication was so frequent as to overshadow all the others. One time bronchitis, at another time neuralgia, at another laryngitis, and at still another period pharyngitis afflicted the greatest number. Another fact equally curious is the probable trend of the disease from west to east, as mentioned more fully above.

In addition to all this, one would naturally expect much sickness this year, from the fact that throughout the world the weather has been unusual. In some situations it has been either more severe or more variable than has been known for fifty years.

This has been called the "germ age" of medicine as well as the "German age;" and in the strugle to find a microbe to account for every sickness it seems that we are overlooking common causes. When a grown girl gets her feet wet and has an ovaritis, or a boy eats green apples and has an enteritis, no germ is suspected, yet it seems impossible in some diseases to think of any thing else but a living cause and not a dead one. It is apt to be forgotten that many causes may produce the same appearance or symptoms of some particular affection. An inflamed hand may have been caused by heat, frostbite, chemical irritants, or erysipelas, and, not knowing the antecedents, it would, at a particular stage of the affection, be impossible to say which. "Taking cold" may make the tonsils exude a substance as to give them an appearance that no one could tell whether it is follicular tonsilitis or true diphtheria. Why, therefore, is it necessary to invoke the germ of influenza this year, when such cases of sickness occur every other year and are classed as simply colds.

The presence of pneumonia can be accounted for on any hypothesis. Sternberg has shown very conclusively that the coccus, which is always present in pneumonia, and causes that disease when injected into the lungs of the lower animals, is always present in the mouth. Nothing is more reasonable than to suppose that when the mucous membrane has lost its vigor and resisting power by an attack of inflammation, it offers an opportunity to the coccus to establish itself where it can do the most harm. It makes no difference what has caused the inflammation, for the tissue would naturally be less resistant in any case. It may be impossible to give a lucid reason why pneumonia assumed the particular form already discribed in which the characters of lobar and broncho pneumonia were intermingled. It can only be conjectured that the inflammation, which always limited itself to a small portion of the respiratory tract if the disease was above the lungs, pursued the same course when it attacked the mucous membrane in the lungs.

In connection with the etiology of this sickness, a coincidence might be referred to in the case of the animals in the post corral. At the beginning of the sickness, about February 10, one of the mules died of an illness which was characterized by intense congestion of the respiratory mucous membrane with much swelling of all subcutaneous tissue of the head, peritonitis, great pain, and delirium. In veterinary works the nearest affection in symptoms and course is the fatal form of "congestive influenza." As far as known all the other animals remained healthy.

In forming a conclusion as to the real cause of this epidemic it is safe to say that, while the meteorological conditions alone might account for the affection, the similarity of the symptoms to those of epidemic influenza and the slight evidence of contagion make it probable that, though it may not be a true influenza, that disease may have had a decided part in modifying an ordinary epidemic of "colds" such as are seen every year in every part of the world. From a study of all the cases I am most inclined to the opinion that we have had nothing more than the diseases found every winter, only more of them, and that though the word "influenza" has been repeatedly used to group the cases, give them a name, and show that many were alike in their resemblance to that disease, the word is in the strictest sense a misnomer.

Giovanni Marenna's article on the etiology of influenza has just been published in the New York Medical Journal (April 11). If he is correct in his surmises about the disease being caused by meteorological conditions and not by microbes, then we have had "influenza," pure and simple, this year. In that case a different signification must be given the word than the meaning usually conveyed. The definition of influenza would then be "a disease, sometimes epidemic, caused by meteorological conditions, and commonly called a cold."

MALARIAL DISEASES.

Only a few years ago malarial disease constituted the prime factor in the constitution of the sick reports of our Army. To-day it occupies a minor position, except at certain posts. The admission rate for the Army amounts to only 62.23 with 1.58 noneffective per thousand of strength as compared with 92.93 admission and 2.79 noneffective in 1890 and with 120 and 3.25 in 1889. Twenty years ago there were as many cases of malarial disease at many of our military stations as there are now of all diseases, injuries included. Drainage and sewerage, pure water supplies, improved quarters, and the abandonment of insalubrious localities have effected this gratifying result. Nevertheless Fort Sill, Okla., continues to give 546.05 admissions per thousand with 10.03 constantly sick, and Fort Reno, Okla., 456.95 with 10.42. Washington Barracks, D of C, takes third place with 348.40,but only 6 constantly sick. Camp at Oklahoma, Okla., takes fourth place in prevalence, 333.33, but third in noneffectiveness, 9.24. Fort Brown, Tex., which had formerly a notorious record for malarial disease, has now only a nominal rate. In 1889 its admission rate was 1,675.86 with 38.58 constantly sick; in 1890, 325.91 with 8.32, and last year 16.13 with 0.35. This extraordinary record can be attributed only to the use of cool distilled water from the ice machines.* The twentieth post in the order of prevalence had in 1889 an admission rate of 189.19, in 1890 131.14, and in 1891 97.18. The reduction of the rates of these diseases is thus seen to be general.

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*See under the heading of Water Supplies, page 74.

DIARRHEAL DISEASES.

These diseases also have been undergoing a gradual lessening in their prevalence in the Army. The admission rate of the past year, 108.21, shows this when compared with 118.40 in the previous year, and 172.82 in the previous decade. The average duration of the diarrheal cases was 3.7, of the dysenteric 15.4 days.

The incidence of diarrheal diseases appears to be irregular; seldom do the same posts hold from year to year their relative positions in the order of prevalence. Last year Fort Barrancas and St. Francis Barracks, Fla., had the largest admission rates, 574.06 and 392.50; Barrancas and Fort Stanton, N. Mex., the largest noneffective rates, 18.14 and 5.10. Although St. Francis Barracks had such a large number of cases they were slight in character, giving only a rate of constant sickness equal to 2.87 per thousand of strength. The average duration of each case at Barrancas was 11.53 days; at Fort Stanton 5.81 days, and at St. Francis Barracks only 2.67 days. In 1890 Fort Sam Houston, Tex., was the post at which these diseases were most prevalent, with Fort Sill, Okla., second. Last year the former occupied the twelfth place and the latter the fifth in the order of prevalence.

RHEUMATISM.

Last year rheumatism occasioned 75.33 admissions per thousand of strength as compared with 83.19 during the previous year, and 107.28 during the previous decade, a gradual lessening in the prevalence of this disabling disease. The improvement is also manifest in the discharge rate, which was 1.25 in the past year, 2.06 in 1890, and 2.96 during the previous decade. Again, the constant sick rate during the past year was 3.93, in 1890 4.05, and in 1889 4.79.

As usual in former years, the posts that have had the largest prevalence during the past year are situated in no one latitude or longitude, but are scattered indiscriminately all over the country; nor are the posts which have the largest rates in the reports now under consideration the same with those that had the largest rates in 1890 or in former years. The post which has the largest admission rate is Fort Apache, Ariz., 247.70, with 6.23 noneffective. That which has the largest noneffective rate, 13.02, is Jackson Barracks, La., with 123.80 of admissions. The ten posts of greatest prevalence during the year are situated in as many States—Arizona, Nebraska, Washington, Montana, New York, Texas, Florida, Kentucky, California, and New Mexico. Local conditions have therefore more to do with the incidence of rheumatism than geographical considerations. Damp soils from high-ground water level are no doubt as productive of the disease in one State or Territory as in another, and damp clothing or bedding may be as dangerous to the individual as a damp soil to the garrison. The statistics show a decided excess of prevalence in the Department of Arizona, where as a rule the subsoil water level is far below the surface, but where men go out on scouting and other expeditions unprepared for changes of temperature, seduced into carelessness by the general warmth and equability of the climate. There is a valuable lesson to be learned from the statistics of rheumatism in our Army.

VENEREAL DISEASES.

During the past year the admission rate for these diseases was for the white troops, 70.64, for the colored, 88.18, for the Indians, 91.22, and for the Army as a whole, 72.46 per thousand of strength. The noneffective rate for the white troops was 4.96, for the colored 5.69, for the Indians, 3.40, for the Army, 5.00. The average number of days of treatment was for chancroids, 24.2, for syphilis, 43.9, for gonorrhea, 19.3. The comparison between the admission rates for these diseases in our own and foreign armies has already been made in discussing admission rates in general. Nevertheless our rate of 72.46 per thousand of strength may be again compared with the 212.10 of the British home-service troops, with the 64.49 of the Italians, and the 26.76 of the Germans.

Our admission rate of 72.46 compares favorably with 75.22 in 1890, and 79.09 as the annual average of the previous decade. In the prevalence of these diseases, as in that of all those heretofore considered in this report we find a steady improvement as the years pass on. Nevertheless, 46 men discharged from service and 5 in every thousand constantly sick from venereal diseases is more than we should have were the proper quality of men gathered at our recruiting depots.

The post that gave the highest admission rate, 266.20, was again, as in several former years, the recruiting depot at Columbus Barracks, Ohio, but the improvement observed is satisfactory, for in 1890 this rate was 380.46, and in 1889, 462.44 These rates by themselves show a vast improvement in the quality of our recruits, for the conditions otherwise at this depot remain unaltered so far as understood at this office. Jackson Barracks, La., and Fort McPherson, Ga., follow with rates almost as high as that of the recruiting depot, but after these the admission rates of the posts which have the highest rates drop remarkably. For instance, the fourth post in order of prevalence has a rate of only 146.12, although it is a recruiting depot, Jefferson Barracks, Mo. Although Columbus Barracks has the highest rate for admissions it takes only third place for non-efficiency. The small camp at Eagle Pass, Tex., has the dishonor of having relatively the largest number of men constantly disabled by these diseases, 16.28 per thousand of strength. Fort McHenry follows with 16.27, and then comes the recruiting depot, Columbus Barracks, with 15.95.

ALCOHOLISM.

Alcoholism also has been decreasing in our Army, but by much slower steps than the diseases already discussed. The admission rate for the year amounted to 40.01 as compared with 40.73 in 1890, 41.43 in 1889, and 56.68 during the previous decade. The rate among the white troops was 44.91; among the colored 4.36; no case occurred among the Indian companies. Six deaths and one discharge were among the direct results of intemperance, all among white troops. The enormity of this habit of intemperance among our soldiers may be best appreciated by comparing our rates with the freedom from drunkenness of the British, 2.56, the Italian, 0.03, and the German army, 0.20. To remove this blot on the record of our Army, recruiting officers should be strict in refusing to accept any man who has the slightest appearance of being addicted to the use of intoxicating liquors.

The 55 men at Camp Pilot Butte, Wyo., have the worst record, 218.18; but the habits of the 46 men at Camp Pena Colorado, Tex., and of the 57 men at Fort Ontario, N. Y., are nearly as bad. Jackson Barracks, La., comes next in order; but of the large posts Madison Barracks, N. Y., holds the undesirable position at the head of the list, with a rate of 164.56; Willets Point, N. Y., follows with 134.99. The posts havin the best records are all large—Fort Grant, Ariz., 3.46; Fort Custer, Mont., 8.67; Fort Apache, Ariz., 9.17; Fort Bayard, N. Mex., 9.43; West Point, N. Y., 10.72; and after these come the two recruiting depots, Davids Island, N. Y., 10.97, and Jefferson Barracks, Mo., 11.42. The attention of commanding officers is respectfully invited to the prevalence and distribution of drunkenness as shown in Table XVII, appended to this report.

PULMONARY CONSUMPTION.

The admission rate for the Army was 2.97; white 2.68; colored, 4.84; Indians, 10.14. The absolute number was 69, of which 10 were colored and 3 Indians. Eleven of these died, of whom 8 were white, 2 colored, and 1 Indian; 42 were discharged, 33 white and 9 colored. The average duration of treatment in each case was 107.4 days. These statistics are somewhat of an improvement on the past, for the rate of 1890 was 3.26 and the average annual rate of the previous decade 3.51. The British rate was 4.29, the Italian 0.97, and the German 2.49.

PNEUMONIA AND PLEURISY.

Ninety-nine cases of pneumonia (not complications of other diseases) were reported during the year, 74 white, 20 colored, and 5 Indian. The average duration of each case was 34.5 days. Twenty of the cases terminated fatally, 17 white and 3 colored. The admission rates were white 3.54, colored 9.69, Indian 16.89; the average of the Army 4.25 as compared with 3.96 in 1890, 4.86 in the previous decade, 5.43 in the British, 6.15 in the Italian, and 10.96 in the German army. Our present rate may therefore be considered satisfactory.

The largest number of men affected at any one post was 12, all white men, reported from Fort McKinney, Wyo. Fort Niobrara, Nebr., followed with 9, 4 of whom were Indians. Eight cases occurred in Columbus Barracks, Ohio, and as many among troops in field service in the Department of the Platte. Fort Riley, Kans., had 7; Fort Douglas, Utah, and Fort Keogh, Mont., 4 each; Fort Grant, Ariz., and Fort Missoula, Mont., 3 each. Nine posts had 2 each, and twenty-three posts 1 each.

Pleurisy caused a total of 45 admissions, 39 whites, 5 colored, and 1 Indian, with no resulting death or discharge.

INJURIES.

The rates for injuries differed but little from those of the year 1890, being for admission 248.91, for deaths 3.02, for discharges 2.76, and for noneffectiveness 8.60 per thousand of strength. More than half of the admissions consisted of sprains and contusions. Seventy-one cases of heat stroke were reported, only 2 of which were among the colored troops; none fatal. Sixty-two cases of frostbite were differently distributed, as only 36 of these occurred among the white troops, and the only fatal case was in the person of a colored soldier. Sixty-eight cases of gunshot wounds were reported, resulting in 14 deaths and 23 discharges; but in addition there were 19 cases in which death was instantaneous or followed so soon after the receipt of the injury that the men were not taken on sick report. The number of these casualties was therefore 87, of which 4 occurred during the reloading of cartridges, 7 at target practice, 7 while hunting, all not fatal; 15 with 8 deaths in personal encounters; 28 with 1 death by accident; 19 with

17 deaths as the result of suicidal attempts; and 7, all fatal, from wounds received in action with hostile Indians.

Eighteen deaths from drowning were reported; of these 6 occurred while fishing or hunting, 3 while bathing, and 9 by other accidents.

Twenty-two cases of suicide were reported during the year; 1 officer and 21 enlisted men; infantry 11, cavalry 1, artillery 4, general service 2, ordnance corps 2, hospital corps 1, staff 1. Gunshot was the means selected in 17, cutting the throat in 1, and poison in 4 cases; in 9 the cause was alcoholism, in 1 temporary insanity, 1 tired of living, 3 despondency, in 8 uncertain. The nationalities were United States 9, Irish 6, German 4, Scotch, Dane, American Indian, 1 each; ages 25, 29, and 36, 3 each; 32, 2; 21, 22, 23, 30, 37, 38, 39, 41, 44, 46, 1 each; and in one case not stated. Four occurred in February, 3 in May, 2 each in January, April, July, August, September, and October, and 1 each in March, November, and December. Three occurred at Fort Snelling Minn., 2 at Fort Davis, Tex., and 1 at each of seventeen different posts.

Nine attempts at suicide were reported, all enlisted men; 5 infantry, 2 artillery, 1 cavalry, and 1 noncommissioned staff. Alcoholism was the reported cause in 4; temporary insanity in 4; while in 1 the cause was uncertain. The attempt was made by gunshot in 2, by cutting the throat in 3, by poison in 3 cases, and by stabbing in 1 case. The nationalities were United States 3, United States colored 1, Irish 2, Russian, Dane, and Scotch, 1 each; ages 25, 2; 22, 24, 27, 35, 44, 48, and 49, 1 each. Two cases occurred at St. Francis Barracks, Fla., and 1 each at seven different posts. The months were May 3, February and September 2 each, and August and April 1 each.

The total suicides and attempts at suicide numbered 31; 4 in the first year of service, 4 in the second, 3 in the third, 1 in the fifth, 2 in the sixth, 2 in the seventh, 3 in the eighth, 1 in the ninth, 2 in the tenth, 1 in the eleventh, 2 in the fifteenth, 1 in the sixteenth, 1 in the twenty-first, 2 in the twenty-fifth, and 1 each in the twenty-eighth and thirty-first.

INFLUENCE OF SEASON ON THE SICK RATES.

The ratios needful to a full study of this subject are given in Table X, appended to this report. It may be enough to state here that the usual seasonal curve of prevalence is altered by the epidemic of influenza, which raised the monthly rates markedly above the average in March and again in December. Excluding venereal disease, alcoholism, and injuries, as uninfluenced by season, the average monthly rate of admissions per thousand of strength for all other diseases was 83.6. In January the rate was slightly below this. In February it rose, reaching a maximum of 131.7 in March, after which it fell gradually through April to a minimum of 66.3 in May. This low rate was prolonged through June and July, but in August an autumnal rise to 78.8 was observed. During the next three months the rates were 71.1, 70.3, and 72.4, after which the recrudescence of influenza increased the admissions to 112.3.

CIVILIANS ATTACHED TO THE ARMY.

The civilian attachés of the Army comprise the families of officers and enlisted men, servants, employés of the various departments, together with their families, and in short all persons not included in t personnel of the Army, who are allowed to reside at military commands. These numbered 13,330; 2,350 adult males, 5,116 females, 5,864 children.

The admissions to sick report consisted of 2,036 adult males, of whom 31 died, 7,485 adult females with 54 deaths, and 6,155 children with 111 deaths; an aggregate of 15,676 admissions and 196 deaths. The admission rate per 1,000 of mean strength was 866 for adult males, 1,463 for adult females, and 1,049 for children, or an aggregate of 1,176; the death rate 13 for males, 11 for females, and 19 for children, an average of 15.

By way of comparison the statistics of the previous year are given: Admission rate, males, 931; females, 1,305; children, 1,132; all civilians, 1,158; death rate, males, 13; females, 9; children, 23; all civilians, 16.

The deaths and their causes are shown in the following table:

Diseases.	Adult males.	Adult females.	Children.	Total.
Acute febrile and infectious diseases	1	7	32	40
Constitutional		5	8	13
Developmental		3	16	19
Nervous	3	3	9	15
Respiratory	10	9	14	33
Circulatory	5	12	4	21
Digestive		4	12	16
Peritonitis	2	1	2	5
Urinary	3	3		6
Reproductive		3		3
Locomotor system	1			1
Parturition and results		2		2
Total from disease	25	52	97	174
Total from injury	5	2	6	13
Unknown	1		8	9
Total from all causes	31	54	111	196

MARRIAGES AND BIRTHS.

On the reports were noted 52 marriages—6 of officers, 35 of enlisted men, and 11 of civilian attachés.

The births reported numbered 453—male, 211, female, 242. Eighty-eight were children of officers, 316 of enlisted men, and 49 of civilians. Besides these, 24 births occurred among the Indian prisoners at Mount Vernon Barracks, Ala., 14 males and 10 females.

VACCINATIONS.

The total number of primary vaccinations reported was 2,382, of which 1,455, or 61 per cent, were successful, 810, with 545 successful, at the recruiting depots, and 1,572, with 910 successes, in the Army at large.

The revaccinations numbered 7,974. Of these 3,460 were at the depots, 4,514 in the Army at large; 1,293 of the former and 1,655 of the latter, or a total of 37 per cent, were successful.

Bovine virus was used in 2,376 primary cases, 1,451, or 61 per cent, successful; and in 7,883 revaccinations, with 2,935, or 37.2 per cent, satisfactory.

Humanized virus was used in 6 primary cases, 4, or 66.6 per cent, successful; and in 91 revaccinations, with 13 cases, or 14.3 per cent, satisfactory.

INDIAN PRISONERS.

The death rate among these has been exceedingly high since their establishment at Mount Vernon Barracks, Ala. Consumption among the older members of the community and diarrheal affections among the children have been the principal causes, aided in most instances by the gross ignorance of the people and in several cases by their efforts at cure. The following extracts from reports of medical officers on duty at this station throw light upon the conditions. Capt. Borden appears to have effected a material improvement, supported as he has been by Lieut. Wotherspoon, Twelfth Infantry, in charge of the prisoners. The report of the latter shows how much has been accomplished since the almost naked, filthy, and vermin-covered colony became settled in their present location. It is a question, however, whether all this provision for their comfort and the improvement of their sanitary condition has been really beneficial. With all civilized people a lessened death rate is the measure of their advancement. During the first two years of the stay of these Indians at Mount Vernon Barracks, and before they had all the comforts and care which are now given them, 39 died, 20 during the first and 19 during the second year. During the next three years 141 died, 43, 53, and 45. In rates per thousand living the deaths of the five years were, respectively, 55, 51, 110, 146, and 110. These increased death rates in spite of sanitary care are, in my opinion, not due to climatic influences, but to change of habits.

The history of all Indian tribes that have come under the influence of our civilization is that they become decimated by consumption as soon as they give up their mode of life in the so-called wild state; and these Apaches are no exception to the rule. In the Chiricahua Mountains they lived a hard life in the open air, hunting for food, collecting mescal for winter use, and making frequent raids into Sonora for luxuries. Now their life is bounded by the lines of their camp. It is the same with the women and children, for these Indians were migratory, changing camp from canyon to canyon in the mountains, and the constant work of collecting seeds and berries fell upon them. If they were permitted to live on a larger reservation, preferably in a mountain country, their death rate would probably fall to its normal of about 40 or 50 per thousand; but so long as they are confined in idleness and close limits, as now, they will continue to be decimated annually.

Maj. P. J. A. CLEARY.—*January, 1891:* The entire number is 360, and of this number there were 112 taken on sick report, with 3 deaths. The deaths were all children. Of these but 1 was under treatment, this a case of chronic dysentery. The other 2, so far as could be ascertained, were in good health on being put to bed, and were reported dead next morning. They were both young, 1 two days old. * * * A large proportion of the sickness is due to climatic causes. They lived in Arizona, where the altitude is high and the climate dry and warm, and they were at once transferred to a climate on the sea level, and consequently humid. When they are thoroughly acclimated those left of them will be healthy.

February, 1891: The only death during the month was that of a baby a few days old, whose death was believed to be due to poison intentionally administered because of deformity. It is a custom with this tribe to destroy children afflicted with congenital malformations.

March: During the month a child died of broncho-pneumonia, and the other two were women who suffered long from tuberculosis; one of the lungs, the other of the bowels.

Acting Asst. Surg. D. J. SPOTSWOOD.—*April:* There were 5 deaths during the month, 2 under 5 years of age, 1 under 1 year. One was sent from the school at Carlisle, Pa., in the last stages of tuberculosis. Death resulted in 3 cases from tuberculosis, 2 of the bowels, and 1 of the lungs; chronic enteritis was the cause of death in the fourth, and acute enteritis in the fifth. The sanitary condition of the camp is good.

May: One death from tuberculosis of bowels, 1 from old age and inanition, 1 from peritonitis, and another from Indian medicine. Two cases which resulted in death did not present themselves for treatment, and the patient that died of tuberculous bowels was in a dying condition when sent to the hospital. I would especially invite attention to the Indian man, Nigger Cozzey, the cause of whose death was peritonitis. My attention was directed to this patient on the 15th of last December; he was then suffering from an abscess extending from within the scrotum, thence beneath the perineal fascia around the right side of the anus to the right gluteal region. This enormous abscess was opened and evacuated under strict antiseptic precautions, and the patient put upon supporting treatment. He improved rapidly, and was discharged from hospital in good health April 21, and about fifteen days later was discovered in a critical condition in his cabin. The probability seems to be that he was tampered with by the squaws, who take advantage of every opportunity of administering their so-called remedies. Of the cases that proved fatal, two were under 4 years of age, one 85, and the remainder 40.

June: During the month 1 death occurred, the cause of which was Bright's disease. The patient, a woman aged 33 years, had been ill for several months. * * * I would assign as one of the causes of the marked decrease in the number of cases of sickness, and in the death rate, the recent establishment of a bakery, from which an abundant supply of excellent bread is furnished to the Indian camp. There can be no doubt that previous to the erection of the bakery the wretched bread which the Indians baked for themselves caused the majority of the cases of diarrhea and dysentery. Considering the location of the camp, upon a hillside and valley, the sanitary condition is excellent. Owing to a recent appropriation the new Indian village is rapidly approaching completion, and when the comfortable houses upon the high and dry pine-clad hill are occupied by the Indians, and an excellent supply of pure water from wells from 75 to 100 feet in depth, which are bored through the underlying clay strata, is used, it is to be hoped that all factors of disease will have been eliminated.

July: One death resulted from syphilitic rheumatism, 1 from cholera infantum, and 3 from Indian poisons given as medicine. I would again call attention to the administration of remedies by the old squaws. In one of the cases of poisoning above reported the child had been under treatment of the surgeon for two or three days, and was gradually improving (having been brought daily to the hospital for treatment). On the day of its death, in the morning, the mother was requested to bring the child to the hospital, which she failed to do, and upon going to investigate the cause of her absence, about 3 p. m., the child was found dead and the usual crowd of old squaws around. The child that died of cholera infantum was brought to the hospital in a dying condition. The other cases of poisoning were not under medical treatment at all. The woman the cause of whose death was syphilis had been affected for many months, and was a mass of disease from head to foot.

Maj. P. J. A. CLEARY.—*August:* When the Indian troops move into their new quarters and have regularly organized messes, with food properly cooked, cases of bowel trouble will disappear. Just now the cooking is done by the squaws, and is not of the best, but is vastly better than it was some months ago. * * * Of the deaths one was an adult, a long-standing case of consumption; the two others were children, one dying from diarrhea, and the other from causes unknown, as the child was never brought to hospital, but was treated by the Indians themselves. The principal sufferers among these Indians are the children, and the chief causes of their sickness improper food. * * * The interpreter regularly attends sick-call with me, and much of the success is due to his explaining such directions to them as I give; but the squaws give children, while yet suckling, half-cooked meat to eat while being treated for diarrhea or dysentery, and the little wretches eat it with the avidity of carnivorous animals. It is hard for any treatment to avail in the face of this miserable habit.

September: There were 6 deaths during the month, 2 from disease of the bowels, 1 from disease of the brain, and 3 from unknown causes, as they were kept in the Indian houses and doubtless treated by the Indians themselves. With a view of stopping this vicious custom the acting assistant surgeon who attends these Indians was instructed to make frequent visits to their homes to detect just such cases, but with every care it is often difficult to detect them.

October: The causes of death in 3 of the 4 fatal cases were bowel affections. The other was a chronic case of general debility in an old woman. One of those bowel cases was certainly consumption, and it is probable that all 3 were of the same character. When this affection attacks the bowels of whites or Indians it is almost invariably fatal. Bowel affections are yet quite prevalent among the children, owing chiefly to improper diet, but the mothers are being gradually educated in this respect.

Maj. C. E. MUNN.—*January, 1892:* The employment of Indian women as nurses in the female ward has been recommended by the medical director of the department, but I believe no officer of the medical corps of the Army who has been on duty here has done so; and it is felt by those most interested that practically such service would be dangerous, through ignorance of language and general aversion to the duty of sympathetic and intelligent care of the sick. It is understood, however, that in time of epidemic or unusual number of grave cases some such service could be utilized through selection of Indian wives or relatives of the sick. It is found by experience here that members of one family will not willingly nurse sick members of another family.

April: I have been assisted by the arrival of Asst. Surg. W. C. Borden, U. S. Army, whom in a division of duties I assigned to the care of the Indian prisoners' camp and the annex hospital wards. After consultation, he made a thorough inspection of every family with a view to stopping the spread of tubercular and ordinary filth diseases. He believes that certain radical sanitary improvements should be effected, and has embodied his ideas in a communication, which I return to-day, recommending that it be forwarded with this. My only fear in giving approval is the doubt of its practicability, yet it would seem best to try. * * * So much remains to be done regarding infected clothing, etc., that, as I said before, Dr. Borden's method should, with modifications, be tried, which I present as follows: For some time there should be, first, an inspection of houses, including the family, made weekly by a medical officer. This has been done by the line officers, but a medical officer might point out defects which would otherwise be overlooked. This should be done at some appointed hour, when the service would not interfere with other military requirements of the interpreter and camp officers.

Inspections made at unappointed hours would, I think, interfere with the habits of the families; many members might be absent gardening, etc. All infected clothing should be destroyed; but authority to issue necessary articles in place must follow. All neglects of cleanliness should be reported. Myself or the junior medical officer on duty here is at all times ready and anxious for the duties recommended, and we believe that improvements can be made. Yet the most enthusiastic, after some experience here, find it difficult to lay down sanitary rules definitely as at first might seem simple enough. There are no earth closets at the camp, yet the ground is not made unsanitary, because the adults from habit go to a distance in the woods, and the children can not spoil a sandy plain constantly policed. The water supply will not be affected, because there are but few deep wells away from the cottages. Earth closets or water-closets are contemplated, but, as yet, from the present social habits they would not be used. And here I close my remarks to the post commandant, with the expression that constant education of the older Indians regarding the dangers of infection by consumption, which I know has been going on, will eventually lead to decreased death rates and a lessened number of slum diseases. Any violent changes I deprecate.

June: In my last inspection I find the dwellings of the Indian prisoners clean, even tidy, a corresponding locality of boarding houses in any New England factory village not so clean, and my whole inspection to-day was fairly satisfactory. Among these people (the village community) I find an ordinary amount of sickness. The teething, weaning diseases of childhood, the common diseases of children at this season, were usual, perhaps more frequent. Now, anywhere in the world, little children have a milk diet when it can be obtained, and these have none. The mothers nurse their children until the breasts furnish no more; and the critical period of weaning, the "second summer," as it is called in the North, the baby is teething, the mother has no milk, and the food is the soldier's or prisoner's rations, modified only by ignorant parents. I have addressed a letter of sanitary advice on this subject—the need of some cows at a place where many babies of diseased parents are born and developed.

Lieut. W. W. WOTHERSPOON, *Twelfth Infantry, in charge of Indian prisoners of war.*—The statement of Asst. Surg. Borden that the Indian village is now in a most unhygienic and unsanitary condition, and that of the 75 houses inspected 45 were simply accumulations of filth, would seem to require some explanation, and I accordingly submit the following: Having been deeply impressed with the necessity of guarding against the spread of diseases through the accumulation of dirt about the camp, in the houses, and on the persons of the Indians, the following regulations were made by me and have been enforced to the best of my ability during the past six months with, from my point of view, most sanitary results, considering the state of civilization of the Indians: (1) The entire camp, except the parade ground, is to be swept daily the first thing in the morning, the house sweepings and the sweepings of the ground about the houses being gathered into piles, which are at once removed and burned; this in order to destroy consumption germs in the sputa deposited about the houses. (2) Each house is to be washed out, thoroughly cleaned, and prepared for inspection once each week (Sunday). (3) All children excepting those in arms to be paraded once each week (Sunday), when they shall be carefully inspected for any apparent disease and as to personal cleanliness. (4) That no nuisance shall be committed within 100 hundred yards of the limits of the village; any deposits made by the small children to be removed at once. (5) That an Indian, detailed and paid for that purpose, shall inspect the houses from time to time, other than the regular weekly inspection, reporting any houses needing immediate attention as regards filthiness, and in order that the householders may be punished. (6) That in case of a death among the Indians in their village, all clothing, personal property, and articles capable of carrying contagion should be at once burned, the house closed, thoroughly disinfected, and fumigated before another family should move in. (7) That all cases of disease or sickness coming under the observation of the superintendent and interpreter, as well as the officers of the camp, should at once be sent to the surgeon for treatment. These with other minor precautions have been adopted to try to purify the camp. I know of no cases of violation of these rules.

The camp is inspected daily by myself or my assistants, the houses are inspected weekly on Sunday morning, and the children weekly on Sunday morning, at which time a most minute inspection is made not only of their clothing, but of their hair, skin, and finger nails. In these inspections members of the guard attend. Any child found unclean is at once sent to its parents, and after being washed and clothed, again inspected. Any house found unclean is ordered cleaned, the occupants being given additional punishment if the orders are not at once complied with. For personal cleanliness these provisions have been made: Each household has from one to two washtubs and scrubbing boards, an abundant supply of soap, and lines to hang out the clothing to dry, an umlimited supply of straw and bed sacks for change of bedding. There are four sweat houses or steam baths almost constantly in use, besides a swimming tank 29 feet by 17 feet, with constant flow of water, now being completed. The hair of all the men and boys has been cut short, with a few exceptions among the old men. From the above I think it will be evident that every effort has been made to improve these people by insisting upon personal cleanliness, as well as cleanliness about and in their houses. The apparent discrepancy between this statement and Dr. Borden's must, I think, be looked for in the relative ideas of cleanliness held by each of us. What would naturally seem to him, coming freshly among these people and considering the question from a hygienic standpoint, a very far from satisfactory state of sanitation would equally naturally appear to me, who view the question from the standpoint of the progress made in eighteen months very satisfactory, having found these people in filthy nakedness, clothed only in rags, with hair infested with vermin, their skins caked with accumulated filth, their houses filled with dirt and offal, sleeping on the ground in the most abominable rags, cooking and eating on the ground, treating and killing their own sick. The contrast seems to me most striking, and I can not but feel that it is most gratifying.

Having referred at some length to the methods evolved to meet the end that Capt. Borden wishes to accomplish, I would respectfully state that I am fully in accord with him in his desire for improving the condition of the camp. I believe his recommendations both wise and practicable, with very slight modifications, which would in noway affect the carrying out of his recommendations regarding the personal inspection of the people. I would suggest that it be made of each family in front of its dwelling, that both the inspection of the houses and the people be made on a set day, that the recommendations as to the destruction of filthy property be modified so as to have all public property—which, according to regulations, can be destroyed only by an inspector—carefully cleaned and disinfected before being further used. I have talked to the influential Indians in the camp, who are willing and anxious that every effort should be made to remove disease from among them. I have done this because I deem it wise to have assistance rather than resistance from them. I have made inquiries as to the cost of an 80-gallon boiler for the purpose of boiling all infected articles, and will willingly put a woman in charge of this work and pay her for it. In other words, I am not only willing but most anxious at all times to assist with all my power the surgeon on duty with these people, and will welcome at all times such wise recommendations as those made in this paper. My only reason for dwelling at such length upon this subject is to remove any impression that might arise from reading Dr. Borden's report—an impression I am sure he did not intend to convey—that no effort had been made toward sanitary or improved hygienic conditions. In conclusion, I recommend that necessary orders to carry out the suggestions made be issued at once, with the modification suggested as to the disposal of public property. There can be no doubt as to the legality as well as wisdom of the order.

List of special reports received from Army medical officers during the calendar year 1891.

MEDICAL REPORTS.

Name.	Rank.	Report.
Birmingham, H. P	Capt. and asst. surgeon	Pneumonia; pleurisy; emphysema; paracentesis; recovery.
Bradley, A. E	First lieut. and asst. surgeon.	Hyperemesis, due to compound hypermetropic astigmatism, or to reflex neurosis from the male genital organs.
Cleary, P. J. A	Major and surgeon	Epidemic catarrh; death.
Do	do	Epidemic catarrh; apoplexy; death; autopsy.
Cronkhite, H. M	do	Malignant pustules; unguentum hydrargiri nitratis efficient in early stage.
Corson, J. K	do	Aneurism of the aorta; autopsy.
DeLoffre, A. A	Capt. and asst. surgeon	Phthisis treated with Koch lymph; discontinued by patient's request.
Egan, P R	do	Variola.
Gibson, J. R	Major and surgeon	Diabetes; death; autopsy.
Glennan, J. D	First lieut. and asst. surgeon.	Autopsy; death from delirium tremens.
Gorgas, W. C	Capt. and asst. surgeon	Phthisis; treatment with Koch's lymph. Two cases; improvement.
		Origin of typhoid fever at Fort Barrancas, Fla., in April.
Hartsuff, A	Major and surgeon	Epileptiform convulsion; malingering.
		Subacute muscular rheumatism.
		Chronic dyspepsia; cured.
		Asthma, due to climatic conditions; two cases.
Harvey, P. F	do	Epidemic influenza at Fort Keogh, Mont.
		Thermograph; pleuropneumonia.
		Pneumonia; thermograph.
Heizman, C. L	do	Phthisis; treatment with Koch's lymph; improvement; thermograph.
Horton, S. M	do	Autopsy; acute alcoholism.
Huntington, D. L	Lieut. col. and surgeon	Pneumonia; two cases; recovery; thermographs.
Jarvis, M. S	First lieut. and asst. surgeon.	Diphtheria (child), at Fort Bayard, N. Mex.
Kneedler, W. L	Capt. and asst. surgeon	Sanitary environment of Jackson Barracks, La.
		Catarrhal bronchitis; recovery.
		Pneumonia; delirium tremens; death.
		Fibroma of vocal chord.
La Garde, L. A	do	Congenital anisometropia, two cases; remarks.
		Secondary amputation of the knee-joint; recovery.
		Death from exposure to cold.
		Clinical memoranda; diseases of the eye.
Lippincott, H	Major and surgeon	Locomotor ataxia.
McElderry, H	do	Typhoid fever; thermograph.
McVay, H. E	First lieut. and asst. surgeon.	Autopsy; peritonitis attending rupture of pyæmic abscess of liver.
		Epidemic influenza at Fort Mackinac, Mich.; composite thermograph; twelve cases.
Mason, C. F	do	Epidemic catarrh at Fort Washakie, Wyo.
		Epidemic influenza at Fort Washakie, Wyo., April and May, 1891.
		Acute articular rheumatism treated with phenacetin.
Macauley, C. N. B	Capt. and asst. surgeon	Epidemic influenza at Fort Lewis, Colo.
Matthews, W	Major and surgeon	Epidemic influenza at Fort Wingate, N. Mex.
Moncrieff, D. S	Act. asst. surgeon	Malarial fever.
Munn, C. E	Major and surgeon	Thermographs in three cases of typhoid fever at Fort Monroe.
O'Reilly, R. M	do	Typhoid fever; recovery; thermograph.
Phillips, J. L	Capt. and asst. surgeon	Typhoid fever; death; thermograph.
		Typhoid fever at Fort Reno; death; thermograph.
Powell, J. L	do	Epidemic influenza at Fort Randall, S. Dak.
		Typhoid fever; recovery; thermograph.
		Five cases of typhoid fever at Fort Randall, S. Dak.
Poindexter, J. D	First lieut. and asst. surgeon.	Epidemic pertussis at Camp Poplar River, Mont.
Rafferty, O	do	Variola; death; thermograph.
Smith, A. M	do	Acute desquamative nephritis; death.
Suter, W. N	do	Quinsy; death.
Tesson, L. S	Capt. and asst. surgeon	Epidemic influenza at Fort Sidney, Nebr.
Tilton, H. R	Major and surgeon	Pneumonia, pleurisy; death.
		Scarlet fever; tracheotomy and opening of deep cervical abscesses.
Turner, S. S	Act. asst. surgeon	Acute hepatitis.
Vickery, R. S	Major and surgeon	Asthma and enlarged liver.
Willcox, C	First lieut. and asst. surgeon.	Sciatica.
Winne, C. K	Capt. and asst. surgeon	Pneumonia; recovery; thermograph.
		Variola; thermograph.
Worthington, J. C	do	Pneumonia; death; thermograph.

List of special reports received from Army medical officers, etc.—Continued.

MEDICAL REPORTS—Continued.

Name.	Rank.	Report.
White, R. H	Major and surgeon	Remittent fever at Fort Myer, Va.; thirteen thermographs.
		Typhoid fever; death; thermograph.
Woodruff, C. E	Capt. and asst. surgeon	Epidemic influenza, Fort Missoula, Mont.
Wright, J. P	Lieut. col. and surgeon	Purpura hemorrhagica nonfebrilis; death.
		Speedy and satisfactory results of use of thallin in urethritis.
		Gratifying results of use of salol in enteric fever; thermograph.
Wyeth, M. C	Capt. and asst. surgeon	Two cases of varioloid at Fort McIntosh, Tex.

SURGICAL REPORTS.

Name.	Rank.	Report.
Arthur, W. H	Capt. and asst. surgeon	Dislocation of costal cartilages; remarkable for trifling symptoms resulting.
Bradley, A. E	First lieut. and asst. surgeon.	Three cases of amputation.
		Imperforate anus, child; successful operation through perineum.
Bannister, J. M	Capt. and asst. surgeon	Laryngotomy; laryngeal phthisis; recovery.
		Marked astigmatism unmasked by an injury to face.
Brown, P. R	do	Shot wound, arm.
		Shot wound, shoulder.
Cleary, P. J. A	Major and surgeon	Incised wound, throat; great loss of blood; rapid recuperative powers.
Clendenin, P	Capt. and asst. surgeon	Volkman's operation for hydrocele; recovery.
Edie, G. L	do	Autopsy in a case of shot wound of abdomen.
Frick, A. P	Act. asst. surgeon	Death from compression of the brain.
Gorgas, W. C	Capt. and asst. surgeon	Epithelioma.
		Laryngeal diphtheria; tracheotomy.
		Foreign body in left bronchus.
		Rupture of liver.
		Shot wounds, head.
Girard, A. C	Major and surgeon	Shot wound, abdomen; death.
Hartsuff, A	do	Malingering, two cases.
Harvey, P. F	do	Morphine poisoning; recovery.
Holland, F. H	Act. asst. surgeon	Acute general peritonitis caused by a kick; death.
Hubbard, V. B	Major and surgeon	Obstruction of bowels.
Jarvis, N. S	First lieut. and asst. surgeon.	Lightning stroke.
Kœrper, E. A	Major and surgeon	Shot wound, thorax; autopsy.
Lauderdale, J. V	do	List of wounded Indian prisoners treated at Pine Ridge, S. Dak.
La Garde, L. A	Capt. and asst. surgeon	Perinephritic abscess; lumbar incision; recovery.
Maus, L. M	do	Shot wound, bladder.
Mason, C. F	First lieut. and asst. surgeon.	Ganglion, wrist; partial excision.
Moncrieff, D. S	Act. asst. surgeon	Death from overdose of medicine, self-administered.
		Fracture of fibula.
McElderry, H	Major and surgeon	Cancer of breast.
		Perityphlitic abscess; incision; recovery.
		Shot wound; removal of necrosed bone.
Phillips, J. L	Capt. and asst. surgeon	Stricture of œsophagus.
Price, C. E	do	Suicide; shot wound of chest.
Shannon, W. C	do	Shot wound, chest and abdomen; death.
Sewall, C. A	Act. asst. surgeon	Rattlesnake bite; recovery.
Tilton, H. R	Major and surgeon	Operation on lower eyelid.
		Amputation for lacerated wound of hand.
Winne, C. K	do	Suicide; incised wound, throat.
Wright, J. P	Lieut. col. and surgeon	Amputation, forearm, for laceration of hand.
		Hæmatocele from muscular strain.
Wolverton, W. D	Major and surgeon	Shot wound of abdomen; death.
Woodruff, E	do	Shot wound, abdomen; death.
Walters, F. G	Hospital steward	Fracture of femur; recovery.

SURGICAL OPERATIONS.

During the year the Medical Department of the Army reported 207 surgical operations, 72 of which were necessitated by injuries and 135 by disease. The number, character, and results of these are shown in the following statement:

Nature of operation.	Disease or injury.	Total.	Recovered.	Died.	Remarks.
Removal of tumors	Sebaceous, 7; encysted, 7; lipoma, 5; fibrous, 6; adenoma, 1; epithelioma, 2.	**28**	28		Scalp, 12; face, 9; shoulder, 1; side, 1; abdomen, hand, 2; foot, 2.
Removal of foreign bodies		**7**			
Bullets and shot	Shot wounds	7	7		Shoulder, 2; thigh 3; foot, 2.
Opening of abscesses		**5**			
Incisions	Perityphlitic, 1; rectal, 2; perineal, 1; perinephritic, 1.	5	5		
Operations on the eye		**7**			
Pterygium		5	5		
Iridectomy		1	1		
Extraction of lens		1	1		
Operations on the mouth		**5**			
Excision, tonsils	Tonsillitis, 3; hypertrophy, 1.	4	4		
Uvula	Elongated uvula	1	1		
Operation on arteries		**2**			
Ligation	Incised, 1; shot, 1	2	2		Radial, 1; superior profunda, 1.
Operation on veins		**6**			
Varicocele		5	5		Ligation.
Varicose veins		1	1		
Operations on the respiratory organs.		4			
Laryngotomy	Laryngeal phthisis	1	1		
Paracentesis	Pleurisy, tuberculosis.	2		2	
Tracheotomy	Laryngeal diphtheria.	1		1	Survived 14 days.
Operations on the digestive organs.		**39**			
Laparotomy	Shot. 1; incision, 1; abscess, 1.	3	2	1	Survived 2 days.
Hernia		2	2		
Fistula in ano		15	15		Incision.
Hemorrhoids		17	16	1	Ligation, 5; incision, 4; excision, 5; clamp, 2; dilatation, 4.
Fissure of anus		1	1		
Imperforate anus		1	1		
Operations on the lymphatic organs.		**7**			
Removal of glands	Venereal, 2; non-venereal, 5.	7	7		
Operations on the urinary organs.		**6**			
Stricture, internal urethrotomy.	Gonorrheal, 3	3	3		
External urethrotomy		3	3		
Operations on the generative organs.		**10**			
Phymosis	Congenital, 1; gonorrheal, 2.	6	6		Circumcision.
Hydrocele		2	2		
Removal of testicle	Hydrocele	1	1		
Removal of part of scrotum	Tubercular testicle.	1	1		
Operation on bones		**14**			
Removal of portions	Shot, 3; fractures, 1; necrosis, 4.	9	8	1	Cranium, 1; ulna, 2; humerus, 1; wrist, 1; phalanges, 4.
Trephining	Compression brain	1		1	
Excision	Shot, 2; fracture, 1	3	3		Ulna, 1; metacarpal, 1; metatarsal, 1.
Periosteotomy		1	1		Clavicle.
Operations on joints		**16**			
Reduction of dislocations		13	13		Shoulder, 6; elbow, 2; knee, 1; ankle, 4.

Nature of operation.	Disease or injury.	Total.	Recovered.	Died.	Remarks.
Aspiration		1	1	......	
Forcible flexion		2	2	......	Knee joint.
Operation on limbs		**39**	......	......	
Amputation for injury:					
Forearm	Shot	1	1	......	Primary.
Fingers	Shot, 4; injury, 12; frost, 1.	17	17	......	Primary, 13; intermediary, 4.
Thigh	Fractures, 4	4	4	......	Primary, 2; secondary, 2.
Knee joint	Fractures	2	2	......	Primary, 1; secondary, 1.
Legs	Shot, 3, fracture, 1, necrosis, 2.	6	6	......	Primary, 2; intermediary, 4.
Toes	Injury	4	4	......	Primary, 3; intermediary, 1.
Amputation for disease:					
Fingers	Felon	1	1	......	
Leg	Gangrene	2	2	......	
Toes	Deformity	2	2	......	
Operation on skin, etc		**12**	......	......	
Ingrowing nails		10	10	......	
On cicatrices		2	2	......	

SANITARY CONDITION OF THE ARMY.

QUARTERS.

Although much has been done during the past few years to improve the condition of our military stations by erecting new barrack buildings, repairing and improving old ones, and by the abandonment of posts that were falling into decay, the sanitary reports of post surgeons and medical directors make frequent mention of overcrowding and deficient ventilation, and occasionally of dampness, rotting woodwork, leaky roofs, and falling plaster.

At Fort Wayne, Mich., the quarters are reported as overcrowded, poorly ventilated, and in need of repairs. At Fort Schuyler, N. Y., the barrack rooms which had been barely habitable have been improved by extensive repairs, yet the age and decaying condition of many of the buildings prevent much improvement in the sanitary condition of the post. Fort Brown, Tex., is in a similar state of decay. Reports from Camp Eagle Pass, Tex., are exceedingly unsatisfactory. Windstorms blow the dust through many crevices, the roofs leak and are infested with bats, centipedes, and scorpions, while skunks and snakes make their homes beneath the floors. The quarters of the enlisted men at San Carlos, Ariz., are board structures, fairly cool when open at the sides, but when the frequent dust storms of summer necessitate their closure they become converted into veritable hot-boxes. The quarters at Fort Grant also are overcrowded and unventilated, and according to Col. Joseph R. Smith should be replaced by new buildings.

Reports of overcrowding and consequent deficient ventilation are, however, of more frequent occurrence than those of decay and want of repairs. Some of the squad rooms at St. Francis Barracks, Fla., gave only 300 cubic feet of space to each man, the bunks almost touching. Here the plan of putting part of the command under canvas was tried, but had to be given up on account of the dampness of the soil. At Fort McKinney, Wyo., the old barrack buildings, although recently repaired, are unventilated and much too small for the number of men, the bunks being separated by an interval of not more than 1 foot. At Fort Bowie, Ariz., an increase to the garrison temporarily reduced the air space per man to 400 cubic feet. At Angel Island, California, five sets of company quarters furnished, respectively, 500, 518, 518, 618, and 698 cubic feet per man. At Fort Mackinac, Mich., an increase of strength at one time lessened the space per man to 600 cubic feet; this in a climate which requires double windows and necessarily limits ventilation during the winter season. To remedy overcrowding and imperfect ventilation at Fort Meade, S. Dak., extensions of the barrack rooms were approved with ingress and exit flues. Air was admitted into the old squad rooms by channels opening under the stoves, but no suitable provision was made for the exit of foul air; and in extending the quarters during the past year no method of ventilation was introduced into the extensions. These defects, however, have been remedied recently. The ventilation of the barrack buildings at Fort Sheridan, Ill., and Fort Buford, N. Dak., are such as to require measures for improvement. At Fort Niagara, 'N. Y., cases of coal-gas poisoning were a result of defective ventilation, and at Fort Brady, Mich., severe colds and headaches resulted from the same cause. Capt. J. L. Powell recommends that at Fort Randall, S. Dak., the middle pane of glass of the lower outer sash of each double window be cut in two horizontally and the lower half replaced by a wooden slide to be opened or shut at pleasure. These apertures, with two exit shafts extending beyond the ridge, would improve the ventilation during the winter season. At Fort Assinniboine, Mont., Maj. Charles B. Byrne recommends special exit flues, because if the ventilating registers open into the stovepipe flue they interfere with the draft of the heating stove and are closed by the men in cold weather. Lieut. Charles F. Mason recommends McKinnel's tubes for the squad rooms at Fort Washakie, Wyo. The same officer comments on the need for ventilation under the floors of occupied buildings in view of the dampness and decay discovered on tearing up the flooring in a set of officer's quarters. Maj. De Witt also refers to this ventilation of the site by recommending large square funnels to be inserted into the ventilating apertures under the buildings at Fort Sam Houston, Tex.

The guard houses of our military stations have been so much improved of late years that few complaints are now found in the reports of medical officers. Ventilation is needful at Boise Barracks, Idaho; ventilation and more space at Fort McHenry, Md. New buildings are called for at five posts: At Fort Sam Houston, Tex., on account of unsuitability of plan and location; at Davids Island, N. Y., and Fort Buford, N. Dak., because the present buildings are radically defective in general plan and sanitary features; and at Fort Spokane, Wash., and Fort McKinney, Wyo., on account of decay, vermin, overcrowding, and bad ventilation.

Complaints as to hospital accommodation are infrequent. The hospital at Fort McIntosh, Tex., requires repairs, while that at Rock Island Arsenal, Ill., is so dilapidated as to be beyond repair. The wards at San Carlos, Ariz., were reported as affording insufficient accommodation, but an allotment has been made for their extension. A new hospital was opened at Columbus Barracks, Ohio, on May 25 last, and the old building abandoned as a hospital.

Camp Eagle Pass, Texas.—Lieut. Ogden Rafferty: These buildings were originally built about the year 1849, when the old post of Fort Duncan was established. * * * The foundation stones alone mark the sites of some of the buildings, others have been abandoned as insecure, while those in use have been rudely patched in the vain effort to make them fit for white people to live in. At one set of quarters during the month it was necessary at 3 a. m. to kill a snake 6 feet in length by 8 inches in circumference, that had crawled into the servant's room through a crevice in the wall. The next evening another snake crawled out from beneath the chairs of the family who were sitting on the porch. A week later a square yard of plaster ceiling fell on the sewing machine that had just been in use. These annoyances, to say nothing of the occasional visits of centipedes and scorpions, induce me to recommend that these old stone buildings be torn down and the stones used for foundations of buildings of modern structure and conveniences.

Maj. Calvin DeWitt, June 23, 1892: The barrack occupied by one troop of cavalry forming the garrison is kept in as good police as a building with a worn-out patched floor, a leaky roof, no ceiling, and damaged wall can be. It has none of the conveniences, as bath room, lavatory, or recreation room, of a modern barrack, except such temporary makeshifts as could be constructed out of material on hand. The officers' quarters are long, low, one-story structures, like all the buildings of brick or adobe; in little better repair than the other occupied buildings. Each consists of a different number of rooms added at various times to the two large rooms erected at first. They have no bath facilities, and no plumbing, but in the yards are earth closets. No modern conveniences except cook stoves. The married enlisted men occupy such habitable, or partially habitable, buildings as can be given to them. All are in a bad condition. The guardhouse is old, with low ceilings, small, barred windows, and irregular flat-stone floor. It presented to the smell evidence of its occupancy. It was clean, but unsanitary.

DEPARTMENT OF ARIZONA.—*Col. J. R. Smith, medical director:* At some of the posts there are not enough of quarters. At Huachuca two families are quartered in single buildings, which were only intended for one, having a single hall, kitchen, and privy. This is exceedingly objectionable. Some of the crowding is consequent upon the abandonment of posts; larger garrisons are sent to the remaining posts than they can accommodate. It seems but right to put up sufficient quarters.

ST. FRANCIS BARRACKS, FLA.—*Maj D. L. Huntington:* The quarters are entirely inadequate for the proper housing of the number of troops comprising the command. The air space per man throughout the barracks is much below the standard required for health; in some squad rooms going below 300 cubic feet per man, and under the most favorable circumstances not exceeding 500 feet. The beds nearly or quite touch one another. The fact that the climate is mild, allowing free ventilation by open windows and doors, has heretofore prevented sickness; but at this season (November), with its great variations of temperature, necessitating the closure of the doors, the air becomes fouled and poisoned. The buildings are mostly old and devoid of many of the conveniences essential to the welfare of the troops Great care has been taken to keep the room in the best sanitary condition, and only the strictest care in this respect will prevent the evils of overcrowding. The plan of placing a part of the command in tents has been tried; but owing to the condition of the soil, its dampness and chilliness producing bronchial troubles, it has been abandoned.

ANGEL ISLAND, CAL.—*Maj. W. H. Gardner:* Abundant testimony of skilled professional observers has shown that human beings can not be overcrowded without soon showing the effects of it in some form of disease. To be free from sickness and capable of performing their alloted tasks in life human beings require a plentiful supply of fresh air, and those whose duties require them to be a large part of their time out of doors, such as soldiers, require a more plentiful supply of fresh air than those whose habits and occupations keep them in overheated, ill-ventilated rooms, where their systems after a time become tolerant of impure air and poisonous exhalations of their own and other human bodies. In all these quarters, even with the small number of men here, there is not, in one single instance, even one-half of the cubic space required for health; and should these companies be recruited up to the standard of 58 men to the company they could not get over one-third of what is required. Since coming from Pine Ridge Agency the sick list of the command has ranged from 10 to 17 each day, and it shows no tendency to decrease; and, while I do not assert that all or even half of the cases taken on the sick list are due to overcrowding, still I am confident that a considerable number of them are. I would therefore respectfully recommend that additional quarters for troops be erected at this post, or that at least two companies be moved to another station, so that the vacated quarters could be used for the companies left here. * * * There are a good many of these cases taken on the sick list that are undoubtedly due to the effects of overcrowding. But the sick report does not actually show on its face the total effects of this deprivation of a sufficient amount of pure air, for many of the enlisted men come to me each day complaining of headache, obscure pains, and lassitude, that are undoubtedly due to the overcrowded condition of the barracks and are not taken on the sick list; and I believe that nearly all the cases of sore throat, bronchitis, etc., are due to the fact that the men prefer to open the windows above their heads to get the pure cold air rather than breathe the hot impure air.

The commanding officer: I do not believe the health or comfort of this command would be in any degree improved by reducing the number of companies at this post. * * * In the five years the First Infantry has occupied this post each company has occupied its own barracks even when there have been vacant rooms, and without apparent injury to their health. While the quarters are not as large as they should be for the full allowance of men per company, 58, a number which has not been reached for some years, the companies rarely exceeding 40 men, which is about the present strength, I think they are sufficiently large for the number of men that actually occupy them. In making the calculation for the air space the post surgeon took no account of the men who do not sleep in the rooms measured, but who occupy other rooms in the building, as the tailor shop, kitchen, etc., and men who are on guard. A count made last night of the men actually sleeping in the rooms referred to shows, Company A, 27 men, giving air space of 759 cubic feet per man; Company B, 30 men, 955 feet per man; Company E, 23 men, 1,049 feet; Company G, 27 men, 768 feet; Company H. 27 men, 768 feet. This is about the number that habitually occupy these rooms, the number varying slightly every day. The health of the command has always been remarkably good here. The number of men daily on sick report during March and April last year was less than 2 per cent. Since returning from Pine Ridge there appears to have been considerable sickness for this post, but I very seriously question whether any of it is attributable to confined quarters. There are to-day ten cases on sick report, not one of which could be attributed to lack of air space.

Maj. Gardner, November 26, 1891: I visited the barracks and dormitories of the enlisted men with a view to reporting on their ventilation. The quarters were seen at that time under the best circumstances: First, because the weather was so mild and calm that several windows in each room could be kept open all night; and, second, there were no fires in any of the stoves to heat up and deteriorate the atmosphere by the products of combustion. In A Company dormitory there were 26 men * * * and 600 cubic feet air space per man. In B Company dormitory there were 32 men * * * and 814 feet per man. In E Company dormitory there were 31 men * * * and 793 feet per man. In G Company there are two dormitories. * * * In one there were 11 men * * * and 719 feet per man. The other * * * 24 men * * * and 601 feet per man. In H Company quarters there are two dormitories. In one * * * were 23 men * * * and 679 feet per man. The other * * * there were 8 men * * * and 990 feet per man. In all of these sleeping rooms there are more or less perfect attempts made at ventilation by ventilators in the peak of the roof (ridge ventilation), and by keeping the windows partially down at the top. This undoubtedly serves a good purpose, as there was very little if any odor perceptible in any of the rooms, though this system is very imperfect, and even with the number of men found in these rooms at the time of my visit the quarters are too crowded for health, not allowing of either sufficient amount of floor space or of cubic air space per man; and moreover in cold, rainy, or windy weather men can not sleep under those open windows without running serious risk of catarrh, bronchitis, and pneumonia. I have already during the present month taken several men on the sick list with bronchitis, catarrh, and sore throat, who allege that their diseases were contracted in this manner. It is impossible upon so casual an inspection, and without proper means of making a chemical analysis of the air of the rooms, to state exactly how much and in how far the air is deteriorated, since only organic impurities and the presence of sulphureted hydrogen could be detected by the nose.

It is generally accepted as a fact by hygienists that the presence of 0.07 per cent (seven parts in 10,000) of carbonic acid is the greatest amount of this gas, either the product of respiration or of combustion, that can exist in the air without detriment; and if we allow this as the maximum amount of impurity permissible, 3,000 cubic feet of fresh air per hour will be needed for each individual. I need not say that this amount is not allowed in any of the barracks at this post.

Another great fault in this system of ventilation in all of these rooms is the fact that the cold air is admitted immediately over the beds of the men, whereas it should be admitted by air shafts from the outside opening under or near the stoves so that it could be heated before being diffused in the room. The initial air space per man should never be for well men less than 1,000 cubic feet, and double this quantity is required for sick men. This allows of the air being changed constantly and kept sufficiently pure without causing dangerous drafts. The only recommendations I can make in view of the faulty construction of these barracks are that whenever practicable the floor space should be increased to 85 or 90 square feet per man, and the cubic air space be increased to 1,000 feet; and also that the open windows over the heads of the beds be closed, and ventilating shafts be let in, opening under the stoves.

On the foregoing report the department commander remarked: "The commanding officer at Angel Island has been heretofore directed to submit estimates for improving the ventilation of the barracks and enlargement of same another year."

FORT NIAGARA, N. Y.—*Maj. A. C. Girard*: Ventilation of barracks. During the month four men of Company C were at various times affected with foul-air poisoning to such an extent as to necessitate hospital treatment. Other men felt unwell without reporting sick. On visiting the dormitories about 1 a. m. I found that, owing to stove doors being open and doors and windows closed, a very perceptible amount of coal gas mixed with human exhalations made the air almost unfit for respiration. This clearly justifies the repeated efforts on the part of the post surgeon to have the ventilation of the dormitories improved. These evils have been to a great extent remedied during the month by improvised aspirating ventilators, stovepipe connected by a T joint with the smoke pipe of the stoves near the flues, and terminating near the floor with an open elbow. This is an excellent makeshift. A permanent system of ventilation should now be provided for, and I respectfully recommend that steps be taken leading thereto.

The post quartermaster remarked on this report that detailed plans and estimates were being prepared by direction of the quartermaster-general for a proper system of ventilation for the barrack building, and would be forwarded for approval within a few days.

FORT MEADE, S. DAK.—*Maj. J. M. Brown, October, 1891:* In the new squad rooms occupied by D and K troops a condition of overcrowding exists; not more than 11 men should sleep in these rooms. *November, 1891:* Complaints of insufficient ventilation and overcrowding are renewed.

Col. C. H. Alden, medical director: In my report of December 6, 1889, to department commander of an inspection at Fort Meade, I invited attention to the deficient ventilation of the barracks as follows: "The barracks are too crowded and should, if possible, be enlarged. The ventilation of the barracks is unsatisfactory. Air is admitted by apertures inside walls and openings under stoves, but there is no provision for escape of air except in some cases through the ridge. To secure good discharge of air in winter the chimneys should be utilized as exit flues and registers put into them near floor and ceiling, the chimneys being built up from the floor where this is not already the case. If the chimneys are of insufficient capacity a flue should be built alongside." It was understood that the department commander gave instructions not only for enlargement of the barracks, but for constructing exit flues as suggested. The extension of the barracks, not accomplished in 1890, was completed in 1891, but it seems no arrangements for ventilation were put into the extensions and no exit flues provided for the old squad rooms. It is recommended that the suggestions of the post surgeon on this subject (which are not objected to by the post commander) be carried out. This being done the air space would probably be sufficient. Natural or accidental ventilation by doors and windows can not be relied upon in winter when these openings are closed.

Lieut. John A. Johnston, post quartermaster: In reply to instructions in regard to ventilation of old barracks of Troops A, B, D, and K, and the new additions, I have to say that, as I understand it, perfect ventilation is the gradual, continuous, and complete changing of the air contained in any structure, or to a less perfect degree the constant, continuous admixture of sufficient fresh air with the foul to reduce the mixture to a healthful standard. This is true whatever may be the cubic space or number of men housed, these being but elements which render the solution of the problem more or less difficult and consequently more or less expensive. Ventilation through windows, doors, cracks, etc., takes place continuously, particularly in this climate and season. This, I believe, is called natural or insensible ventilation in contradistinction to artificial or systematic means for the same purpose. Now, where the occupations of the men are not violent, personal cleanliness the rule, cubic space generous, and the number of men not too great, natural ventilation in these weather-cracked frame buildings will more than accomplish the desired result.

If to the above elements we add the refinements of light and heat as consumers and vitiators of fresh air we add to the problem and increase the expense. The soldier's occupation is not one of violent exercise—he is as a rule, where the Government affords him the proper facilities, as at this post, personally cleanly—and in all the barracks complained of he has about 1,000 cubic feet of allotted space, which is, I believe, 500 feet in excess of that recommended by Col. Woodhull. In the old barracks referred to, occupied on an average by about 24 men, natural ventilation is accomplished through twenty-four windows and two or three doors, supplemented by wall, floor, and ceiling ventilation, there being thirteen or fourteen wall ventilators, a floor air conduit opening under each fire, and two or three ceiling traps opening in blind attic, the natural ventilation through the roof of these buildings being quite great; and in my opinion their efficient ventilation can be accomplished by proper care with existing arrangements. In the additions referred to natural ventilation is depended on to accomplish the desired result through ten windows, two doors, and three or four ceiling traps. The cubic space per man in the D Troop addition is about or a little over 1,000 feet. No system of ventilation other than the natural one is contemplated in the specifications on file in this office. Whether or not this is sufficient can easily be demonstrated by placing it in favorable state for natural ventilation within limits of comfort and testing it after a night's occupancy. The vitiation noticeable to the sense is now conceded to be largely due to decomposition of organic matter thrown off from the body, and largely increased in case of illness, rather than to results accomplished by the exhaled breath, light, and fires. Hence the test for overcrowding and the consequent necessity for either reducing the number or adding to the means for fresh air supply to reduce the mixture to a healthful standard. I am under the impression, and I think the troop commanders will bear me out, that the additions are sufficiently ventilated, and, if anything, are better than the main barrack rooms.

Maj. J. S. BILLINGS: I presume there is no doubt as to the necessity of ventilating the barracks at Fort Meade, nor is there any necessity of replying to the arguments of Lieut. Johnston, seeing that they have been duly considered by the medical director, and by the post and department commanders. Whether the occupation of the men be light or heavy has nothing to do with the need of ventilation, as the principal pollution of the air is due to exhalation of organic matters from the air passages. The recommendation, however, of the post surgeon in the sanitary report, that if ventilating shafts can not be introduced alongside the chimneys, then "boxed shafts 36 by 24 inches be placed over each stove extending from ceiling beyond the ridge" would give most unsatisfactory results, because the column of heated air rising from above the stove would pass directly upwards and out through these ventilating shafts, leaving the room to be warmed solely by direct radiation, for which purpose the stoves would be quite insufficient. The exit shafts, in cold weather at all events, should open only near the floor, although openings in them near the ceiling may be provided for use in moderate weather, these openings being fitted with shutters closing tightly, which are to be closed in very cold weather. The supplying of such shafts, and of openings for bringing the air in around the stoves, ought not to be a costly matter, but of course the introduction and warming of fresh air will involve an increased expenditure for fuel. It seems to me it would be well for the Surgeon-General to call the attention of the proper authorities to the need for providing this ventilation, in order to maintain the best conditions for health of the soldiers, and to suggest that the necessary means for this purpose be provided.

FORT RANDALL, S. DAK.—*Capt. J. L. Powell:* With the approach of severe winter weather a due regard for the comfort of the men has prompted the adoption of such measures as will best insure a proper degree of warmth in the barracks, but this has to a certain extent been done at the expense of proper ventilation. The windows of the dormitories have been permanently closed, making it impossible to have a complete renewal of the air as often as the requirements of health demand. I would therefore suggest that the lower middle pane of glass of each outside sash be cut in half, and that the lower portion of the glass be substituted by a thin wooden slide, which can be opened or shut at pleasure. Indeed, I recommend that this be done in all buildings where a supplementary outside sash has been attached. By the combined action of these little inlets it is thought a sufficient volume of fresh air will be admitted into the barracks, while the incoming currents will be so broken up that they will the more quickly be raised to the temperature of the inside. By this means the inmates escape chilling drafts, as well as vitiated atmosphere. Certain it is that in very severe weather the men will be much more likely to open these little apertures than they would to raise a window or open a door for ventilation. I further recommend that two air-shafts be constructed from the ceiling to the roof in each squad room, each shaft to be not less than 10 feet in a horizontal plane and 2½ feet wide, the opening over each at the roof to be closed in by a small movable sash worked by ropes from below. The interior of each shaft should be closely plastered and the surface be made perfectly smooth.

FORT ASSINNIBOINE, MONT.—*Maj. Charles B. Byrne* recommends that ventilating shafts be constructed from the ground floors and pass vertically to and through the roof, and that ventilating registers open into the shafts, one near the floor to carry off a current from the lower stratum, and one near the ceiling for ventilation of the upper and warm air. * * * It is recommended that the openings near the ceilings above referred to be covered with fine wire gauze, or with cheese-cloth stretched across a frame. This would admit of a circulation of air without a draft. It is specially difficult to devise a measure for the proper ventilation of army barracks, as the ingress of cold air through the windows and doors and between the boards of the floor can not be regulated, or its quantity estimated. * * * If the openings in the ventilating shafts recommended be covered with a grating or gauze, and have a register inside the latter, the currents of air could be regulated and, I think, cold drafts avoided or greatly lessened. If the latter can be accomplished the incentive to shut out fresh air would be correspondingly less. The ventilating registers into the chimneys which are in some of the squad rooms are at times rendered useless because, opening into the same flue with the pipe from the heating stove, they interfere with the draft of the latter and are closed in cold weather.

FORT SAM HOUSTON, TEX.—*Maj. Calvin De Witt:* I recommend that large square funnels, similar to those now in use in the quartermaster's depot, be put in at least four of these openings in each foundation. I believe these will aid materially in securing a constant circulation and change of air.

Under date of August 17, 1891, Maj. De Witt calls attention to the unsuitability in plan and location of the guard-house, and recommends that if one be erected it should provide—

Large air-space in the prison room equal to 1,200 cubic feet per prisoner. * * * Finished so as to prevent the lodging of vermin in the cracks or joints, where they can hide and increase; where joints are necessary they should be so constructed as to be accessible. This can be secured by lining the prison room with glazed bricks or tiles, laid as closely as possible, and in cement or other equally impervious material. * * * Lavatory bath-tubs in a separate room, where the prisoners can bathe after the day's work is over or when the commanding officer may direct. * * * Means of serving food to the prisoners in a comfortable manner.

DRAINAGE AND SEWERAGE.

At some of our posts there is no system of drainage. Waste water is thrown out to be disposed of by the soil, as at Fort Missoula, Mont., where this disposition is considered to be, and no doubt is, an increasing evil. At Fort Yates, N. Dak., the slops of the kitchens form surface pools, in winter surrounded by a wall of frozen dirt. Fort Myer, Va., requires subsoil drainage, because the continued prevalence of typhoid fever in place of the remittents that formerly prevailed at that post seem to indicate that a dryer soil is needful for the health of the garrison. (See p. 35.)

At Fort Sherman, Idaho, the representations of the post surgeon promise to secure a drainage system for that station. At other posts efforts have been made to assist the natural inclination of the surface to carry off waste water by ditches; but these have not always proved successful; as, for instance, at Fort Apache, Ariz., and at Boise Barracks, Idaho, where the ditches were the cause of so much complaint that a sewerage system connected with that of Boise City has been recommended.

A new sewerage system for Fort Monroe, with a pumping station and an output into Chesapeake Bay, has been approved and an appropriation made by Congress for its construction. Delay in carrying out these plans has been experienced on account of the bids of contractors having been largely in excess of the amount appropriated. It is important, however, that this much-needed sanitary work be commenced at once.

Meanwhile progress has been made at a number of posts. Work on a system of sewerage was commenced at Fort Niobrara, Nebr., to take the place of the foul sinks and cesspools that have been in use for so many years. Fort Ringgold, Tex., has obtained sewers during the year, and the subject of sewerage for Fort Niagara, N. Y., was under consideration by the Quartermaster's Department in April last. At Fort Meade, S. Dak., this improvement lies over on account of an uncertainty as to the permanency of the post. Repairs and improvements at Fort Mason, Cal., have been completed and action has been taken on the reports of the medical officers at Fort Stanton, N. Mex., and West Point, N. Y. The communication of Capt. W. F. Carter, part of which is given below, from the latter station merits high commendation because the care manifestly exercised in the investigation which it reports led to its favorable consideration by Congress.

Fort Snelling, Minn., and Fort Townsend, Wash., want new water-closets; at Fort Ontario, N. Y., new closets with automatic flushing arrangements have been introduced; and at Fort Leavenworth, Kans., the Quartermaster's Department has recognized the unsanitary condition of the latrines, and the work of repair and improvement will be proceeded with as soon as funds are available.

The sewage of Fort Logan, Colo., has up to this time been discharged on a neighboring ranch for disposal by irrigation, but the ranch in the progress of improvement is now on the market for building purposes and some other method of sewage disposal must soon be considered.

Fort Missoula, Mont.—*Lieut. Chas. E. Woodruff:* No artificial drainage. The settling of waste waters into the soil is a serious evil, which has been commented on in previous reports.

Fort Yates, N. Dak.—*Capt. A. R. Chapin:* The frequent error of obtaining a free supply of water without making any arrangement for carrying away the waste has been made at this post. The only practical method of disposing of kitchen slops, etc., in winter is by making surface pools surrounded by a wall of frozen dirt, which are frequently chopped out and carted off. In spite of all efforts these pools overflow and saturate the ground in every direction. The removal of the surface of the ground in spring can not obviate all danger from this source and the barrels used in summer are occasionally overthrown or leak. There were three cases of typhoid fever at this post in August and September, 1889, one certainly, the others possibly imported. Last year and this year there were cases which evidently originated at this post, though no positive source of infection could be discovered.

Fort Myer, Va.—*Maj. R. H. White:* Suggestion is offered that the sanitary condition of the post would be permanently improved by a system of subsoil drainage for the entire area occupied for military purposes. The subsoil is of clay and of very compact gravel, through which the rainfall passes very slowly, and when the fall is heavy many days elapse before the natural drainage is effective.

Fort Sherman, Idaho.—*Maj. J. D. Hall:* The drainage system may be characterized as an unlimited confidence in the porosity of the soil; but the security arising from apparent immunity from diseases directly traceable to bad sanitation is unscientific and unreasoning.

The general commanding the department: The drainage is not satisfactory, owing to the lowness and flatness of the ground, but it is as good as it can be made. The commanding officer has done all he is able to do to improve the drainage. The necessary papers showing the problem to be solved are in this office and will soon be forwarded, and if the estimates are approved and the money furnished an effort will be made to improve the drainage of the post.

Fort Apache, Ariz.—*Lieut. Philip G. Wales:* As to drainage there is none. Open ditches carry filthy water over the brow of the cañon in rear of the officers' quarters, where it lies under the dense shrubbery and decomposes. These are the only means of removing the waste from our kitchens and bathrooms. There has been no discharge of waste water from a bathroom in one of the sets of officers' quarters for a long time. Where the water has gone the imagination must determine.

Fort Niobrara, Nebr.—*Maj. T. E. Wilcox:* The post still lacks drainage, and I have to again urge that means be adopted for its early introduction. The use of sinks and cesspits has resulted in soil-pollution to a dangerous extent.

Lieut. J. D. Poindexter: The absence of a system of sewerage is the cause of the insanitary condition. All the barracks and some of the officers' quarters have at times a strong fecal odor. In the rear of some of the barracks this smell is perpetual.

Capt. Guy L. Edie: The sewerage of the post remains in the same miserable and dangerous condition as formerly reported. There are cases of sickness in the garrison directly attributable to sewer air. The question of drainage and sewerage is in the hands of higher authority. If early action is not taken many families in this garrison will probably have cause to regret it.

Col. Dallas Bache, medical director: I have nothing to add to the representations and arguments of two years on this subject, and can only repeat that the health statistics of Fort Niobrara are such as to confirm the fears of extensive soil-pollution.

Fort Ringgold, Tex.—*Capt. James E. Pilcher:* The drainage of the post is bad because there is no drainage. Cesspools exist in connection with each set of quarters, into which bathing water is supposed to be emptied, while slops from the kitchen are thrown upon the ground. The great heat which produces immediate evaporation has hitherto prevented bad odors and germ dissemination, but such conduct is bound to terminate in infiltration of the soil with filth germs, awaiting only saturation with water to initiate activity. This is to be prevented by the provision of a suitable system of drainage, carrying all waste water into the river below the post. * * * Some time ago a system of sewer mains was constructed about the post, but no connections were made with the quarters. So far as the advantage contributed by them to the post is concerned they might as well run along the great wall of China. The existence of this important work without connections to make it serviceable is farcical in the extreme. Meanwhile the post is in constant danger of disease infection from the slops and other waste matters that are perforce thrown upon the ground in rear of the quarters. * * * Four months have passed since these very essential changes were recommended, during which time several cases of a remittent fever have occurred, and the situation remains unchanged. The foul effluvia emanating from the sewers, which can not be flushed out on account of the lack of connections, are evidence comprehensible by any one of the necessity of prompt action in the matter of sewer connections. I can not too strongly urge that this matter be investigated and that the causes of delay be discovered and removed at once.

FORT NIAGARA, N. Y.—*Maj. A. C. Girard:* It appears that new barracks will be completed early this summer. It is desirable that the usual mistake of not preparing the soil for the reception of buildings be avoided this time, and that not only the lines of sewers and soil pipes be located in accordance with a well-digested system, but that the soil be subdrained in connection with an outlet. The soil consists of a heavy clay which holds water tenaciously. In spring when the subsoil water is under increased pressure it forces itself through cement floors and cemented walls, as is already visible at the new post hospital, where every care, except an outlet for the subsoil water, has been taken to insure a dry situation. The outlet could not be provided until a general drain permitted connection.

FORT MONROE, VA.—*Maj. C. E. Munn:* Cesspools under the conditions here are always dangerous. They are only tolerated anywhere because regarded as temporary expedients. They have been tolerated here too long. Too much dependence is placed on the absorbent character of the soil; too little attention is given to their periodical cleaning and disinfection. I find them in dangerous nearness to cisterns of drinking water, and some have not been cleaned for months, the people most interested innocently indifferent to the possible results. Cesspools at this model military post should be disused as soon as practicable. Most civil communities have long since corrected the evil. A system of drainage for the post and environs should be urged at once.

FORT MEADE, S. DAK.—*Maj. J. Morris Brown:* Any interference with the natural drainage in the hope of improving it only makes matters worse. A thorough system of sewerage is necessary, and I recommend that steps be taken in this direction. I also recommend that the post quartermaster be directed to procure the plans of earth closets in use at other posts with the view of putting them in here and thus getting rid of the present pits. The ground must soon become thoroughly impregnated with matter from these pits.

Col. C. H. Alden, medical director: Dry-earth closets are in use at six posts in this department and give great satisfaction. Some of them have been built after a plan prepared at these headquarters and on file in the Engineer's office. It provides for ventilation and heating and for convenient administration in winter. * * * The introduction of underground sewerage at Fort Meade has not been urged in view of the cost, the doubtful permanency of the post, and the probability that water-closets and sewer connections could not be kept from freezing, the buildings not being substantially built. When it is decided that Fort Meade is to be a permanent post and proper buildings are erected, underground sewers ought to be provided.

FORT MASON, CAL.—*Capt. H. O. Perley:* The repairs and improvements allowed for this post are nearly completed. As far as it was possible to do so, every fixture, trap, and sewer has been carefully tested and the drainage of the post is now, I believe, in a safe condition. The sewers would be improved by extending them to low water and adding a tide trap to each.

FORT STANTON, N. MEX.—*Capt. J. M. Banister:* The condition of the sewer system of this post is a standing menace to the health of the garrison. The post commander has taken great interest in this matter, and with the limited means at his command has done all in his power to improve the existing condition of the sewers, but still the nuisance continues.

U. S. MILITARY ACADEMY, WEST POINT N. Y.—*Capt. W. F. Carter:* I have made a thorough inspection of all public buildings in that section of the post assigned to me for sanitary supervision, with a view to determine, in each case, what may be required to put them in satisfactory hygienic condition. The buildings especially to be considered are the barracks occupied, respectively, by the U. S. Military Academy detachment of cavalry, the U. S. Military Academy detatchment of Army service men, Quartermaster's Department, the U. S. Military Academy Band, and Company E, Battalion of Engineers.

In connection with these will be considered only the subjects of drainage (under the several subdivisions of subsoil, surface, and roof drainage) and sewerage. Certain general conditions applying to these buildings will be first noted, and afterwards the special conditions existing in each will be specifically stated. No attempt will be made in this report to state specific plans of improvement. The conditions which actually obtain will be noted, and the remedies suggested only in a general way.

The quarters above-mentioned are situated in an irregular valley formed by the first and second plateaus along the river front on the north side of the posts; the barracks occupy the upper and narrower of these plateaus. Terminating nearly at the foundations of these buildings is the precipitate slope which descends from the large plain forming the parade ground. Upon the brow of this slope, which sweeps in a more or less curved course around the general depression containing these and many other inhabited buildings, are situated a number of officers' quarters, forming a continuous line overlooking the cavalry, Army service, and band barracks, and an isolated group almost in a line with the Engineer barracks. Back of these officers' quarters, and between them and the hills skirting the general tableland of the Point proper, is a a more or less depressed basin, which, perhaps, for years has formed the rear yards and garden plots of these quarters. Running down from the hills back of the post, at a variable depth beneath the surface of the ground, are ledges of rock which have a general trend towards the river, and in the direction of these buildings, towards the foundations of which, therefore, it is most probable the subsoil drainage tends, both by reason of the rapid decline of the ground surface and the disposition of the underlying rock beds.

It can not, of course, be determined to what extent, if indeed to any, the habitations on the plain above afford sources of pollution to any natural water veins descending from the highlands back of them. As this is, however, a possible danger, it ought to be remembered that subsoil water about the foundations of these buildings may not be pure water.

It may be added that the slope and mountain sides above and to the southward of the valley above described abound in springs, which probably give a good deal of water to the soil overlying the rock.

Each barrack has a basement, on one or more sides of which is an embankment either in contact with the walls or separated from them by an area. In all these buildings except one this embankment is very nearly level with the first floor. The basements are divided into rooms, which are used as kitchens, dining rooms, and storerooms. These rooms are entered from the lower or free side of the building, where the ground level is about the same as that of the basement floor. Only in isolated rooms, in one or two of these buildings, have concrete or cement floors been put down. The buildings will be considered in the order in which the repairs on them seem to be necessary or pressing.

Band barrack—Subsoil drainage.—In the construction of this building no measures whatever were taken, so far as can be seen, to secure the drainage of the soil around and beneath the foundations, or to prevent moisture rising along the cellar walls above the floor level. It is therefore likely that the subsoil water-line often comes near the floors in the basement rooms. It is probable, from the disposition of the rock beds in the immediate vicinity, that at the east end the foundation rests on rock, and that this falls away from the floor level towards the west end, where there is presumably a greater or less depth of gravel and sand.

I am told, and it may be proper to state it in this connection, that near the base of the slope, in front and nearly opposite the west end of the building, was once a spring or well from which water was obtained. A pipe which carried off the overflow passed beneath the road and opened into the area at the southwest corner. The spring is said to have gradually become dry. The vein probably found a lower level and passed off either to the west of the building or under its foundation.

Beneath the brick paving in the area skirting the west side of the west wing is a square brick drain (probably not cemented), by its south end opening just under the point where the overflow-pipe from the well or spring is said to have entered the area, and by its north end into the catch-basin situated at the steps leading up from the northern extremity of the area. This drain is about 6 inches square. It will be necessary to revert to it again. The conditions found to exist in the basement of these quarters are certainly not to be considered satisfactory from a sanitary standpoint. The soil beneath the floors is damp and wet, and the walls are damp, and even wet to some distance above the floors.

It is important that something should be done to secure a drier and more healthful condition of the basement rooms in this building. Of course, it is now impracticable to place a waterproof course in the walls at the ground level; but a good deal may be done to tile-drain the foundation where it rests in sand or gravel; or in those parts of the foundation resting on rock the water may be turned off by an impervious outside wall set well down on the rock, with a loose rubble or gravel course on its upper side to conduct the water off along the intercepting wall. The earth shou be removed for a depth of 7 inches below the floor level of all rooms and halls a coat of 6 inches of concrete laid down, which should be covered with a layer of asphaltum extending a half inch or an inch into the wall between two courses of brick; over this, and forming the floors of the apartments, a layer of cement should be laid smooth and level. The inner surfaces of basement walls for several feet above floor levels should have a coating of coal-tar pitch continuous with the asphalt or coal-tar layer of the floor.

Surface drainage.—The entire building is surrounded by an area, except on the north side of the west wing, where the earth comes in contact with the wall, and on the north and east side of east wing, where the general ground level falls to that of the floor of the area ways. The outer or retaining wall of area is of stone, and is substantially built. Separating the hill in front of the building from the area is a wagon road which is just level with the top of retaining wall of area. The road, of course, is compact and solid and constitutes an efficient watershed; but there is nothing to prevent the water from flowing over the top of the area wall, and I am told that occasionally some of the surface water from the road is thus discharged into the area. A proper surface drain on suitable grades ought to be constructed on the upper side of the road, to lead the surface water off around one or both ends of the building.

The area is paved with bricks, which seem to have been set in sand only; certainly they have never been coated with cement or other impervious material. From the center of the barrack, in front, the area floor has a moderate fall toward each end of the building. From the east of the center the water flows out upon the declivity between the band and army service barracks; from the west of the center the water finds an exit at a catch-basin at the north end of the area.

The back area has three exits for surface water, one at its center, another at its northwest end (a catch-basin); the other is the open end of the area behind the east wing.

The porous brick pavement of the area, as a surface drain, is possibly worse than would be the soil itself, which, in time, would become so packed as to shed water fairly well. There can be no doubt that much of the water flowing into the area finds its way into the soil beneath this brick pavement.

Roof drainage.—The roof water is brought down by conductors, which discharge upon the pavement within a few inches of the ground. From the foregoing it is seen that a large quantity of surface water (from ground and roof) enters the area; which is by no means in a condition to carry the water off quickly or prevent it from sinking down about the foundations. There should be substituted for the brick paving a concrete or cobblestone pavement, well coated with coal-tar pitch, and the outside of the walls of the building should be made impervious to water for a short distance above the area floor.

House drainage or sewerage.—The plumbing appliances in this building consist of 11 kitchen sinks, 3 stationery iron wash basins, 1 tin-lined bath tub, and 2 stone laundry tubs (in one set). The short waste pipes from the laundry tubs, situated in the east end of the main building, open into a 1½-inch lead pipe, which is trapped, but not vented. This pipe joins the waste from the sink (in the same room). The 1¼ inch lead waste pipe from the sink is trapped above its junction with the laundry tub waste, but is not vented. The common waste pipe, thus formed, passes out through the east wall.

The bath tub and hand basins are located in the east wing. The 1½-inch lead waste pipe common to the three basins is trapped, but not vented, and joins the waste from the bath tub, which may or may not be trapped beneath the floor. The waste pipe common to these fixtures runs out beneath the floor and through the east wall. In the main building there are eight sinks (one already noted in connection with the laundry tubs). The waste pipes from five of these discharge into a 2½-inch iron pipe laid under the floor along the back wall, with a slight fall from the east and west ends of the building to the center, where they merge into a common pipe, which runs back under the area pavement. This 2½-inch iron pipe and the waste pipes from the sinks are in bad condition. In some places they have been broken in order to free them of the greasy, filthy matter which had impeded or obstructed the flow of water. Through such a hole in one of the waste pipes it was possible to examine its interior, which was found almost clogged with filthy matter. The opening through which the examination was made had been imperfectly closed with a tin cap and plaster of Paris. The water was escaping, and of course is gradually fouling the soil. The two remaining sinks in the main building are located in its west end The waste pipes from these, passing to the floor and out through the wall, open into large iron pipes which empty directly into the square brick drain (already described), which was once the conduit of the overflow water from the well. In the west wing there are three sinks, two of which are located in the rooms opening out upon the west area, and their waste pipes discharge into a common clay pipe on the outside of the building. This clay pipe opens into the catch-basin at the terminus of the square brick drain. The last of these sinks is located in the northeast corner of the west wing and discharges into the catch-basin already mentioned as the exit for the surface water falling into the western half of the area. All waste pipes from all these sinks are trapped, but not vented. They are of lead and from 1¼ to 1½ inches in diameter.

It must be clear that such an arrangement as has been described is exceedingly objectionable and can not but in time endanger the health of the occupants of these quarters. The square brick drain is already fouled beyond endurance and has been closed at both ends to prevent the escape of offensive gases. It must not be forgotten that these basement rooms and area ways are constantly used by the families living in these barracks, and the area is used more or less as a playground for the children.

Before leaving this subject it is deemed proper to say something about the flooring in the basement rooms. This, a good quality of pine flooring, was put down about five years ago, whether upon new joists or not can not be stated; but both the flooring and joists are now rotting badly in some of the rooms, and adding another and serious source of contamination to the atmosphere of these rooms. The great difficulty in dealing with the house drainage in these quarters is the low level of the basement, in which of necessity the principal plumbing appliances must be placed. There are not proper grades for any of the floor or surface pipes, and without, perhaps, some efficient means of regularly and forcibly flushing, it can not be expected that they will long remain open.

It need not be added that little can be done with the plumbing now in these quarters to improve it or make it safe. The whole thing should be torn out so soon as a new and more rational system can be introduced. This should be done along with the improvements of the subsoil and surface drainage, etc.

RECAPITULATION OF RECOMMENDATIONS.

(1) *Subsoil drainage* of sites of band and engineer barracks, by tile drain where practicable or by impervious intercepting walls with rubble backing where the foundation rests on shelving rock tending to conduct water under the buildings.

The removal of all present floors and putting down concrete, asphalt, and cement floors in all basement rooms, and coating the inner surfaces of walls with some impervious material for several feet above the floor level.

(2) *Surface drainage.*—Deepening of area way on south side of engineer barracks and east, north, and south sides of cavalry barracks; paving with cobblestone, coated with coal-tar pitch, all area ways about all barracks, and the entire surface between south side of the Army service barracks and chapel; the construction of a suitable surface drain on upper side of road in front of band barracks.

(3) *Sewerage.*—The removal of the scattered and disjointed plumbing in all the barracks and providing an approved system of house drainage, to embrace ample bathing facilities. In the band barracks there should be a separate bathroom for the use of the women and children.

It is advised, of course, to retain the isolated privies; but these should be thoroughly repaired and provided with new and improved appliances.

It is well understood that the improvements suggested in this report can not be done by the quartermaster's department at the post without a special appropriation of funds. They have not been urged for this reason and are now recommended and urged in the hope that some provision may be made for the work at an early date.

The Superintendent of the Military Academy referred this communication to the post quartermaster, directing him at once to prepare an estimate for the improvements suggested in the report, which estimate would be included with others to be submitted for the fiscal year ending June 30, 1893. He concurred fully in the recommendations of Assistant Surgeon Carter and commended him for the zeal, intelligence, and efficiency he had shown in his investigations.

FORT SNELLING, MINN.—*Maj. C. K. Winne:* The water-closets in the upper post were put in some years ago and the old form of pan closet was adopted, which is known to be the worst form of closet that can be used. Many of them leak and all are offensive, as it is impossible to cleanse them thoroughly; they have become a constant menace to the health of the garrison, situated as they are in the quarters and communicating directly with bedchambers. New closets of a modern pattern should be put in at once, and I would suggest that a board composed of the medical officers and the post quartermaster be appointed to investigate and report upon the subject.

FORT TOWNSEND, WASH.—*Capt. R. R. Ball:* The present pattern of water-closet (the old Hopper) in the men's closets and at the hospital has nothing to recommend it, and the post surgeon urges that efforts be made to have it replaced by the automatic flush tank with one long, iron, common trough beneath the seats.

FORT LOGAN, COLO.—*Maj. R. M. O'Reilly:* The drainage of the post empties into a sewer which debouches on an adjoining ranch, the proprietor of which is very glad at present to have the sewage for irrigation and fertilization. The ranch has, however, been surveyed and is now or soon will be divided into building lots and placed on the market. It is hardly probable that it will be extensively built upon for several years yet. But the ranch slopes towards the South Platte River, whence a portion of the water supply of Denver is drawn. The premises are, I believe, within the county of Arapahoe, which also comprises the city of Denver. In case the municipal authorities consider the drainage of the post a source of pollution of the river, legal complications may arise. There is an abundance of time to provide against trouble of this nature, and I therefore suggest that a plan for the disposal of the post sewage be carefully matured and be held in readiness to be put in operation if necessary.

WATER SUPPLIES.

Much of the improvement in the health of our troops, particularly as regards the lessened prevalence of diarrheal affections and malarial fevers of the remittent type that has been shown annually in the reports from this office, has been the direct result of the attention given by our medical officers to the water supplies of their posts. Twenty years ago a supply of wholesome water on tap in the kitchens and lavatories of the garrison of a military station was a luxury found only at certain permanent posts in the vicinity of cities. The greater part of our Army "out West" had to be satisfied with water barrels outside the kitchen door or in a shady angle of the building. These were filled morning and evening with water, generally turbid, wagoned with much labor from the river. To procure a special supply for delicate palates a wagon would be dispatched to some spring, rudely dammed to develop its usefulness; and the height of luxury in the Southwest was to have the drinking water stored in two or three large *ollas* suspended in some part of the barrack building where there was shade with a possible air movement to cool the water by its more rapid evaporation. Other insanitary conditions were concomitant with this primitive method of water supply. The troops were in fact exposed to all the deprivations of field service with the added danger of a permanent encampment with its consequent contamination of the soil. Gradually, however, improvements were made at posts which were not regarded as merely temporary stations. Wells were dug, and if an adequate supply of wholesome water was obtained measures were taken for its distribution and for the disposal of waste water. This opened up the question of sewerage; and the sick list of the post became lessened in proportion to its sanitary development. Springs were opened up and creeks dammed up into reservoirs of supply. When no better source was to be obtained, sedimenting and storage reservoirs were built and the water pumped from the river, at first perhaps by mule power but speedily by steam. Now there are few posts that are dependent on the water barrel. The condition of the water supplies of our Army may be appreciated in a general way by a few brief comments on the reports concerning this subject that have been filed during the past year.

The supply at several posts has been inadequate; a few, indeed, have been threatened with a water famine. At Fort Niobrara, Nebr., the supply is said to be good, but deficient on account of the insufficiency of the water main. In May last the administration building of the post was burned, although with a proper water supply it could have been saved. The deficiency at Fort Grant, Ariz., where, in July, the use of water had to be limited, was due to the inadequate capacity of the reservoir and the defective character of its inflow pipe. At Fort Huachuca, Ariz., where the scarcity of water by the drying up of streams in summer suggested the necessity of abandoning the post, relief was obtained in June last by underdraining the *cienega* at the source of the supply with agricultural drain tiles. At Fort Robinson, Nebr., the difficulty lay not at the source but in the means of collection. The water from excellent springs was led into a reservoir sunk near to, and 14 feet below the level of, a small brook. When the necessities of the post lowered the water in the reservoir below the level of the brook the undesirable water of the latter entered and was pumped up for distribution. This was remedied in May last by an additional inflow from the springs.

Some posts, such as Fort Barrancas, Fla., Jackson Barracks, La., Fort Monroe, Va., and Fort Warren, Mass., collect the rainfall for household use; and others supplement their well and other water supplies by cisterns connected with certain of their buildings. Rain water, as stated in my report last year, is always a good water if proper precautions are taken for its collection and storage. Rain water shed from a house roof carries with it into the cistern the soot and condensed ammoniacal vapors of coal combustion, the infinity of débris, organic and inorganic, which constitutes the dust of a city or other community, together with more massive fragments, as of dead insects, decaying leaves, etc. After a few days these various matters settle, forming a soft. black, pultaceous sediment, and leaving the supernatant water comparatively clear and pure; but every succeeding rainfall not only increases the quantity of this sediment, but by its inflow stirs up that which had already accumulated, rendering the water impure until sedimentation is again accomplished. As time passes the sediment increases, and the water becomes unfit for use after each rainfall. These conditions are aggravated in the dry season, when the water is low in the cistern and the quantity of sediment relatively much increased. At such times the water may become foul to the sight, taste, and smell. Remittent fevers have been developed by the use of such water, although diarrheal troubles are its most common offspring. At Fort Bidwell, Cal., some cases of fever were attributed to the presence of slimy mud in its reservoir of surface water. After long seasons of dry and dusty weather, which leave the shedding surfaces coated and the conductors clogged with decaying vegetable matters, the first of the succeeding rainfall should be run to waste in order to clean out the system. This is best effected by personal attention, such as is given by the householders of New Orleans to their domestic water supplies; but some form of cut-off should be used at all military posts where the water is not freed from its suspended matters by overflow from a collecting into a distributing cistern. The simplest form of mechanism to effect the rejection of the roof washings consists of a joint in the conductor which, when in place, leads the water into the cistern, but when turned runs it to waste. Another consists of an overflow pipe running down along the outside of the cistern and guarded at its lower end by a valve which can be opened or shut at pleasure. The conductor from the roof opens into this pipe a few inches below its upper end or point of emergence from the cistern. When the valve below is open, water from the roof runs to waste through the pipe; when it is closed the water is carried over into the cistern, while accidental solids are trapped in the pipe.

The cisterns at Fort Barrancas, Fla., are insufficient, the whole of the watershed not being utilized. Artesian wells have been a success at Pensacola, Fla., and would probably prove so at this post. With proper care in collection and storage, as above stated, Jackson Barracks, La., may be supplied in part from its cisterns, aided by distillation for kitchen and potable uses. The river water at this post is unfit for any purpose except for flushing drains or subduing fire. The cisterns at Fort Monroe, Va., contain water usually wholesome but occasionally tainted with decaying vegetable matter. Its imported well water is said to be hard and even brackish. At Camp Oklahoma, Okla., water from a spring is recommended by the medical director, as the present source, a cistern belonging to the railway company, is considered open to contamination from a privy erected for the use of the railway employés.

The cistern water at Fort Warren, Mass., is an important factor in the supply of the post, although insufficient even with the post wells for the present small garrison. The provision for war service has not yet been obtained. As usual with such waters, this supply often becomes bad through want of care, particularly in seasons when the water level in the cisterns is low. The cistern water service here is aggravated by the use of lead service pipes, and colic, constipation, with other symptoms of chronic lead poisoning, are not wanting. The well, from which the largest supply is obtained, is within a few feet of the drain which carries off the soil water from that part of the garrison, and as it is merely faced with brick every rainfall soaks into it laden with the filth from the soil. Moreover, the wells are not productive. In the last annual report from this office it was stated that the water supply of the post gave out in July, and it became needful to purchase water in Boston, transport it in boats to the island, and transfer it to the various cisterns by means of the post fire engine. Last year, in August, the wells again went dry, and this with only the skeleton garrison of times of peace. For years past the defective water supply of this important post has been brought to notice by every medical officer stationed there, but with no other result than the expenditure of several thousand dollars in the endeavor to strike a deep supply. It is very well from the military point of view to make this post self-reliant as to its supply of water, and to this is to be attributed the efforts made to reach a deep-seated water-bearing stratum; but in the meantime the health of the present generation has to be considered, and the plan recommended of bringing water from Long Island for temporary purposes and peaceful occupation meets with the cordial support of this office.

From posts supplied with river water the reports at certain seasons complain of the muddy condition of the water, and as diarrhea generally prevails at such times without any other apparent cause, the condition of the water is generally, and no doubt correctly, held responsible. During the past year this was the case at Fort Missoula, Mont., and Fort Du Chesne, Utah. At Fort Randall, S. Dak., the post surgeon invited attention to the muddiness of the water supply and submitted plans for its purification, but on account of the probable abandonment of the post these were not approved. The alkalinity and other impurities of the Little Big Horn at Fort Custer, Mont., have occasioned intestinal disorders among the men at the post, although none are this year reported specially. The river supply at Fort Apache, Ariz., from the South Fork of the White River, is considered to be of doubtful quality on account of an inflow of irrigation water above the intake. The question of a water supply at Fort Reno, Okla., has been agitated for several years. The quarters of the men are supplied from the North Fork of the Canadian River, which is generally turbid and, according to one medical officer, "simply detestable." The supply for officers is wagoned from Caddo Springs, distant a little over 5 miles from the post. The number of cases of sickness among the men at one period led Capt. J. Van R. Hoff, then post surgeon, to urge the introduction of the spring water for general use. Nevertheless, an allotment was made to sink an artesian well to the watershed which has its outlet at the springs. The well was bored to a depth of 400 feet when an accident put a stop to further work at that point. The medical officer now on duty urges the piping of the water from the springs as being feasible and not expensive, and the construction of cisterns to utilize the rainfall, in both of which recommendations he is sustained by the medical director; but the contractors meanwhile have commenced drilling at another point.

At Fort Stanton, N. Mex., and San Carlos, Ariz., the supplies are from shallow wells, and are impure. At the former the well is so near the Bonito River that it becomes filled by direct inflow of the turbid water in the seasons of overflow; moreover, it is insufficient. A new well has been sunk to a depth of 59 feet without obtaining water. At the latter the wells near the junction of the San Carlos and Gila rivers furnish a water that is alkaline, brackish from excess of chlorides, and organically impure. At Fort Canby, Wash., the supply consists of cistern water and surface water collected in tanks. As the latter is not good, it is proposed to introduce a spring supply. The prevalence of fever at Fort Myer, Va., the extent of soil contamination at the post, and the proximity of the national cemetery at Arlington led the post surgeon to doubt the purity of the well water. Samples analyzed at this office proved to be of good quality chemically; but as the wells are shallow and thus liable to vary in quality at different times, and, moreover, as the supply is inadequate, it is recommended that the post be connected with the city water supply of Washington, D. C. Chemical analysis of the spring water at Mount Vernon Barracks, Ala., failed to show any unwholesome quality, but on account of local considerations a board was convened at the post to consider the question of an improved supply. The recommendation of the board to sink a large well was approved by the department commander.

An analysis of the water supply at Fort Sheridan, Ill., showed that the water is not as pure as it should be, and that the cause is probably the proximity of the intake to the shore, but as there was no evidence of contamination by sewage, it was recommended that the water be examined from time to time until it is definitely settled that the fault lies in the shortness of the inflow pipe, when it can be easily remedied.

At Fort Schuyler, N. Y., the garrison was supplied by pipes from the mains of the New York and Westchester Water Company; but although the connection of a post with the water mains of a neighboring city usually solves the question of a water supply as regards both quantity and quality, it does not always do so. As regards quantity, the only complaint came from Jefferson Barracks, Mo., where the demands of the city of St. Louis at certain periods leave no pressure for the supply of the garrison. This has been remedied in part by establishing a temporary pumping station at the junction of the depot and city mains. As regards quality, complaint is more frequent. From Boise Barracks, Idaho, where a water service from the city was obtained early in the year, there came in October the statement that the water at times was so bad in odor as to be unfit for use. This, however, was due merely to the newness of the service pipes in parts of the garrison, not to an inherent bad quality of the water. At Davids Island, N. Y., the water itself appears to have been in fault; it is f nished by the water company of New Rochelle, N. Y. At Columbus Barracks, Ohio, the water is so hard as to be unsuitable for cooking or cleansing. Fort Brady, Mich., is supplied by water wagons from a hydrant of the Sault de Ste. Marie Water Company. Assuming the water to be good as delivered by the company, it does not follow that it is so at the time of its use on account of the exposures incidental to the water-barrel system of distribution; but this assumption can not be made, for the water is occasionally bad, and doubt has been thrown on its quality at all times. At one period it became turbid and tasted badly as it came from the hydrant, when on investigation it was found that a break in the inflow pipe near a shallow bay through which it runs was the cause of the impurity. It was discovered also that the intake was from the canal in which ships are liable to be tied up, and that over three hundred cases of typhoid fever had occurred in the town during the previous year shortly after an accident to the lock had occasioned the canal to be crowded with waiting vessels. A danger of this kind should not be incurred when it can be avoided by taking the water from the river instead of from the canal. At Eagle Pass, Tex., the town supply is so hard that it has at times been regarded as the cause of epidemics of dysenteric diarrhea. It is derived from wells sunk in the river bank and pumped into tanks. The post supply is obtained from this by means of the water-wagon main and the water-barrel service. The barrels having been found at times alive with embryonic mosquitoes, a pipe service is earnestly desired, notwithstanding the hardness of the water and its dysenteric possibilities.

Fort Leavenworth, Kans., is supplied by the Leavenworth waterworks with water from the Missouri River, the intake being below the inflow of the sewage of the post. This position of the inflow is, however, of small account, as the water is so foul that chemical analysis shows no difference in quality above or below this point. This water should certainly not be used if a better supply can be procured. The charges of the water company are so high that it might be a matter of economy per gallon of water, irrespective of quality, to make an effort to reach a deep-seated supply. A recommendation was made by the post surgeon in August to have the service pipes of Fort Logan, Colo., connected with the mains of some of the water companies of the city of Denver, on the ground that the post supply from artesian wells is liable to be cut off temporarily by accidents to the machinery. In October the propriety of the recommendation was thoroughly substantiated by the occurrence of just such an accident, the choking of the wells. For two weeks water for cooking and drinking had to be wagoned from a city hydrant; and the water-closets, house drains, and sewers became exceedingly offensive for want of flushing. Steps were thereupon taken to connect with the mains of the Citizens' Water Company.

In the report from this office for the fiscal year ending June 30, 1890, which summarizes the statistics of sickness at our military posts during the calendar year 1889, the remark was made (page 37) that if Fort Brown, Tex., were expunged from the list of our military stations the prevalence of malarial disease in our Army would be greatly reduced. Fort Brown has not been abandoned, but its malarial record has been expunged, with a consequent material lessening of the malarial rate of the Army. During the calendar year 1889 the post had an admission rate for malarial diseases of 1,676 and a noneffective rate of 38.58 per thousand of strength. During the year 1891 the corresponding rates were 16.13 and .35. This change which practically alters the status of Fort Brown from that of the most unhealthy to one of the most healthy garrisons in the Army has been accomplished solely by the use of a pure water for drinking and cooking, an accidental consequence of the introduction and use of an ice machine. Formerly the water supply was pumped from the river into settling tanks and distributed for use. It is so pumped and distributed now for general purposes; but the water for cooking and drinking is obtained from a steam condensing coil connected with the ice machine. Distilled water was introduced in 1890 and the extraordinary change in the health of the garrison can be attributed to nothing else than to its use; for all the other sanitary conditions and surroundings of the post remain as they were during the years of insalubrity and high rates.

Fort Ringgold, Tex., gives corroborative testimony to the above. Here distilled water was introduced in 1886. The post surgeon considers that its use has reduced the sick rate one-half since that time, and that most of his admissions for malarial disease are among troops whose duties have taken them away temporarily from the post. As a matter of published record the admissions at this station have fallen from 2,304 per thousand of strength during the calendar year 1885 to such rates as 562 in 1889, 865 in 1890, and 1,366 during the past year.

FORT NIOBRARA, NEBR.—*Lieut. J. D. Poindexter:* The main pipe supplying the water is too small. At some quarters water even for culinary purposes can not be obtained at times. The quality is very good.

FORT GRANT, ARIZ.—*Capt. W. H. Arthur:* Water getting low on account of very small rainfall during July. Its use is carefully limited to prevent waste. Quality is good, but not as excellent as when supply is abundant, as it has to collect slowly and stand in reservoir. * * * Supply of water gradually increasing and quality improving. While the water was scanty and of poor quality many light cases of acute diarrhœa were developed. These are becoming less frequent as the supply of water increases and the quality improves.

Lieut. E. L. Swift, May, 1892: The reservoir is of ridiculously small capacity in proportion to the size of this post and the length of the dry season. An iron pipe 3 inches in diameter runs from the dam toward the reservoir, connecting it at its lower end with a 5-inch pipe. Even this small 3-inch pipe is loose in many of the couplings, broken, eroded, or burst in places, and is at present disconnected from the reservoir. * * * This pipe begins at least 5,000 feet from where a permanent water supply could be assured. This post therefore presents the spectacle of having a permanent water supply near at hand from the benefits of which it is debarred by reason of a patched-up makeshift of a receiving pipe and its lack of a few thousand feet of additional length. The distribution of water at this post is insufficient for its needs in many places. I recommend the enlargement of the reservoir by blasting and excavation at its upper end, but most strongly urge the propriety of a larger receiving pipe (at least 5 inches) and the extension to such a point that permanent water the year round could be assured.

FORT HUACHUCA, ARIZ.—*Maj. T. E. Wilcox, September:* The water supply, while of good quality, has been of barely sufficient quantity to supply the daily needs of the post and we find ourselves at the close of the rainy season with fewer promises of its holding out than ever before in the history of the post. Streams which always heretofore have had running water at this season are absolutely dry, and as an increase can not now be expected until next July the outlook is anything but encouraging. An emergency appropriation should be made at once to determine if this supply can be increased by the method proposed in previous reports or some other practicable way, lest the abandonment of the post on account of deficient water supply may become a necessity.

December: The water supply has not been greatly increased by the advent of cold weather, as was hoped would be the case, and considerable annoyance has been suffered by the freezing of supply pipes, which are insufficiently protected against the degree of cold which has prevailed during the month. A minimum of eight and even seven degrees above zero has been recorded. It is considered desirable that the chief quartermaster of the department be made acquainted with the above statement for the reason that on his recent visit to the post he was given to understand that no danger was likely to occur to the water pipes through frost. As will be seen, the pipes require protection against the cold of winter as well as the heat of summer.

June, 1892: Has been scanty but of good quality; the deficiency promises to be corrected to some extent by efforts made during the month, which were in accordance with recommendations made in the report for June, 1891. Agricultural drain tiles have been introduced in the *cienega* at the source of the water supply, and over 7,000 gallons per day obtained in excess of that heretofore secured; the expense has been nominal, and it is believed that a further increase will be found as the water finds its new thoroughfare. The *cienega* referred to in the last report has been drained and now offers a liberal supply of clear cold water with a temperature of 61° F., which is 18 degrees colder than that of the water from the hydrant at the hospital, and 14 colder than that at the ice machine. It is believed this supply will afford all needed for the saw mill, ice machine, stables, and water closets for the enlisted men. Pipe and a reservoir will be required to make this available, but this will not be attended with great expense.

FORT ROBINSON, NEBR.—*Maj. George W. Adair:* The usually good water supply has illustrated the transitory nature of earthly things by becoming turbid from pollution by surface water, and is chargeable with the undue number of cases of diarrhœa during the month. The causes of this change have been investigated, and merit extended consideration. The spring from which the water is pumped into the tanks for distribution is the lower one of four in the bottom of a gulch leading into White River below the post. The water is collected in a tank which is sunk to a depth of 14 feet below the level of a brook that flows by it. When left to itself the water rises in the tank to a level well above that of the brook, and the pressure is outward from the tank. When the requirements of the post demand rapid pumping the level of the water in the tank is speedily brought far below that of the brook and the pressure is inward—brook water passes into the tank. The extension of the sewerage system has increased the use of water in the post, and the capacity of the spring is no longer sufficient to meet the requirements. The engineer stated the matter clearly, saying to me "I can not keep the level in the tank without pumping creek water." * * * To secure an ample supply for the post the overflow from all the springs should be secured by connecting the inclosing tanks by iron pipes receiving the water at a level well above that of the brook, and the pumps should never be allowed to take water from below that level. It will be well to surround the tanks with cement or other impervious material to prevent the loss of spring water, for the time approaches when it will all be needed for the post; but to trust to the perfection of such devices for the exclusion of brook water is to trifle with public health. To secure a constant outward pressure by maintaining a superior level within the tank is the only method of safety. If rapid pumping at intervals be desired, a reservoir of suitable capacity and above the brook level should be provided to accumulate the overflow while the pump is idle.

May, 1892: The improvement in the water supply is well begun. An additional 250 barrels an hour from another spring already obviates the necessity of pumping below the brook level.

FORT BIDWELL, CAL.—*Capt. W. J. Wakeman:* A few cases of mild fever due to malarial poisoning have occurred during the month. They were caused, in my opinion, by the water. The reservoir contains a considerable amount of slimy mud, which collects in it during the spring freshets when the snow on the foot hills is melting.

FORT BARRANCAS, FLA.—*Capt. W. C. Gorgas:* I once more call attention to the great need of a water supply and urge that the water discovered in boring for a well during the last year be utilized. All the water from the barracks and the married men's quarters should be run into the cisterns; at present only half is collected. The cisterns of these two buildings frequently give out.

JACKSON BARRACKS, LA.—*Capt. W. C. Borden:* On looking up the causes of admission to sick report we find that for the two years ending June 30, 1891, the leading causes were malarial fevers, diarrhea, influenza, accidents, venereal disease, and alcoholism, and that, of a total of 363, nearly one-third of the entire number, 110, were for malarial and intestinal disease, while 57, or over one-sixth, were for alcoholic or venereal diseases. * * * For the malarial troubles we must look to local causes. * * * The water supply of this post is obtained from two sources, rain and the Mississippi River. The former is mainly used for drinking and cooking purposes, the latter for bathing and cleaning. The Mississippi River is never a clean stream, and at those seasons of the year when diarrheal diseases most prevail it is as nearly liquid mud as running water can be. * * * Some idea of the state of the water can be formed when I state that having let the water stand for four hours in a bath tub in my quarters 1¼ inches of mud were found at the bottom. If the deposited mud is allowed to remain for any length of time the odor from it becomes exceedingly offensive. * * * The construction of two large tanks to be used on alternate days, so giving the water in each twenty-four hours in which to settle, would almost entirely obviate this trouble. * * * But the water used for bathing and cleaning purposes, however objectionable it may be, can not be by any means as harmful as impure drinking water.

The water used for drinking and culinary purposes is rainwater drawn as required from large wooden storage tanks, which are attached to each set of barracks and quarters, being supplied by them from the intermittent rainfall upon their roofs. * * * As the prevailing winds are from the river the clouds of dust raised by the passing of horses, vehicles, and droves of cattle are carried towards the barracks to be deposited in part upon the roofs of the houses. During the past summer periods of drought of nineteen, twenty-six, twenty-seven, twenty-one, fifteen, and thirty-seven days occurred. In May alone there are thirty dry days, there being but one-fourth inch of rainfall during the entire month. During these long periods of dry weather, the dust, composed of pulverized earth and animal excrements, together with soot from the chimneys, dead leaves, and insects, and the droppings of birds, steadily accumulates upon the roofs; then comes a rain and sweeps the accumulations into the cisterns. That water so contaminated can be pure or wholesome is impossible, particularly when decomposition is favored by the heat of the southern sun, acting upon the cisterns for long periods of time between the rains, when with the exception of the occasional withdrawal of the water it remains stagnant, and anyone who has seen the accumulated matter which is withdrawn when the cisterns are cleaned can come to but one conclusion in regard to water in which such matter has accumulated. The matter withdrawn is large in quantity, black, and most repulsive in odor. It consists of the precipitated matter swept into the water from the roofs, the organic portions of which are undergoing decomposition. * * * So badly is the water tainted in this way that it is sometimes plainly detected by the taste and smell, as well as by color. In the case of one cistern during the past summer the water was so obviously impure that the cistern had to be entirely emptied and thoroughly cleaned, and the water in the other cisterns differed from that in the one mentioned only in degree. * * * Its use for drinking and culinary purposes should be superseded by that of distilled water. * * * A service of four years in the south, stationed at points supplied with both natural and distilled water has firmly impressed me with the belief that we must look to a use of the latter for a lowering of the sick rates for malarial and intestinal diseases, and I am firmly of the opinion that the general use of distilled water would not only decidedly reduce the sick rate at this post, but at those others where a large number of the admissions to sick report are for these diseases. Therefore my recommendations are that two tanks, each of sufficient capacity to furnish this post with water for twenty-four hours, plus a sufficient space for sediment to accumulate, be erected, and that an oil eliminator and condenser be attached to the engine, that distilled water may be supplied for drinking and cooking purposes.

FORT MONROE, VA.—*Maj. R. S. Vickery:* The water supply of the post is of inferior quality. The rainwater is stored in good condition and at present is abundant for drinking and cooking purposes, for which the other water which is pumped from wells beyond Mill Creek can not be used. The latter is not only hard, but brackish and with a decided saline taste, not suitable even for bathing and washing purposes.

CAMP OKLAHOMA, OKLA.—*Col. B. J. D. Irwin, Medical Director:* The water for use of the command is procured from a cistern owned by the railroad company. A privy for use by the railroad employés has been recently erected, and it is feared that it will endanger the purity of the water through leakage. A spring only a short distance from the quarters could be used by piping the water to the garrison.

FORT WARREN, MASS.—*Capt. P. R. Egan:* The amount of water is insufficient and the quality not good. A search through the hospital records shows that every medical officer stationed at this post for years past has called attention to the unsatisfactory condition of the water supply. The only outcome of their efforts has been the expenditure two years ago of several thousand dollars in the sinking of a well and the erection of an engine and a water tank. This attempt to increase the supply has, however, been a complete failure. Our last condition is worse than our first, and is at present simply deplorable. The well from which most of the garrison obtains its drinking water went dry a few days since. None of the wells have been cleaned in the memory of any one at this post, and this particular well stands within a few feet of the drain which carries off the soil water from that part of the garrison. It is simply faced with brick and covered over with boards. The recent heavy rains and those to come will wash all the filth from the soil into it. The supply for the newly erected officers' quarters is by rainwater from the roof stored in cisterns. So far as I can learn these cisterns have never been cleaned. The roofs, too, are black and tarry looking, and covered with autumn leaves which get mixed up with the rainfall. This water is distributed into the houses in lead pipes, leaving those who occupy these houses at the mercy of their servants to do all their cooking with lead water.

No one will be surprised to hear that in the presence of such a water supply there has hardly been an officer's quarters in which there have not, during the past month, been several attacks of intestinal disorder and abdominal pain, or attacks of nausea and severe abdominal pain accompanied by intestinal disturbance. In some instances these troubles have become so continuous as to render the affection chronic. A similar condition prevails among the men and their families, and equally bad reports come from the citizens employed by the engineers. As all do not drink water from the same source it is evident that all the water on the island is of a similar character. In fact it is is only necessary to drink a few glasses of it to suffer as above described. It would not surprise me if, after the low level of the water in the wells, the heavy rains brought abdominal troubles of a serious nature. The remedy for all this has been pointed out repeatedly. Obtain water from the city supply on Long Island. Another costly failure like that of two years ago would pay for the pipes and labor necessary to give us a good and permanent water supply. In my opinion the water on this island is not capable of being improved, and a supply must finally be obtained from other sources. The failure to obtain it two years ago would seem to fully justify me in this belief.

Col. R. P. Hughes, Inspector-General: The project submitted two years ago for bringing water to this post from the Old Woman's Home on Long Island is probably the most feasible plan and is entirely practicable. * * * The pipe conducting the Boston supply to the Old Woman's Home I think is only four inches. The pressure is represented to be but twenty pounds at that place. Under this condition of things it would be necessary to erect a distributing tank at Fort Warren, for, during the day, when Boston is drawing heavily on the supply, Fort Warren would probably get very little water. In other words, the condition at Warren would be permanently about such as we have at Governor's Island during the heated term of summer. With a large storage and distributing tank, that will fill during the night, there should be little or no trouble. But to return to the inchoate project. If it is a possible thing, fortified places and more especially islands should be prepared to meet emergencies, and dependence upon a water supply carried through a small pipe for two miles and across the main water channel is not in accordance with this requirement. A reasonable supply of good fresh water has been obtained about Boston by sinking a well; other instances have secured a liberal supply of water that was slightly brackish.

FORT MISSOULA, MONT.—*Lieut. Chas. E. Woodruff:* The high water has occasionally rendered the river water full of sediment of vegetable and mineral origin, and in the absence of any apparent cause for the large number of cases of diarrhea during this time it is probable that the water was at fault. The sediment can only be removed by the construction of a settling reservoir which is impracticable for the great cost. Otherwise the water is apparently excellent.

FORT DU CHESNE, UTAH.—*Capt. S. Q. Robinson:* The water supply as distributed is sufficient, but, owing to the rise in the river increasing the organic and mineral matter, is not of as good quality as at last report. Still there has been no illness clearly attributable to this cause. I am informed, however, that last year at the Government sawmill diarrhea of a mild type was quite common until high water subsided. During a recent visit there I recommended to the officer in charge purification of the drinking water by permanganate of potash with subsequent filtration, a method requiring but little labor or attention, demanding only the simplest contrivance, and which under almost exactly similar circumstances I have found effective.

FORT CUSTER, MONT.—*Maj. J. C. G. Happersett:* Water supply from Little Big Horn River pumped into a large tank and distributed by pipes. Water alkaline and varying in degree as the river is high or low.

FORT APACHE, ARIZ.—*Lieut. Philip G. Wales:* The amount distributed I consider insufficient, there not being enough taps in the southern portion of the post to give the inhabitants thereof an excuse for uncleanliness and not enough water to do the irrigating, which latter tends to improve both the appearance and health of the post. As to quality, the water is bad; the source of supply being either contaminated or liable to be so, and the mode of obtaining it from the river (an open ditch perhaps 800 or 900 yards long) decidedly objectionable. A surface drain from the engineer's quarters leads directly into the ditch, and his privy being situated at a much higher level than the canal can reasonably be supposed to contribute its quota to the aqueous constituents. A single case of typhoid fever in these quarters or in camp upon the flat through which the canal runs would be liable to cause an epidemic of this disease. Cattle have free access to the ditch for its whole length and can freely discharge urine and dung into it. Every few days the water used in irrigating a field a short distance above the post is turned into the river with the result of furnishing to our water a considerable quantity (and I presume dissolved) of mineral and vegetable matter as well as any filth which may have been thrown upon the land. The current of the river is so swift that any objectionable materials are rapidly carried down before the oxidizing action of the atmosphere can have time to render them innocuous, consequently it is highly important to remove any probable source of contamination either below the point from which the water is drawn or a great distance above it. An impure water is acknowledged by authorities to be the direct r indirect cause of diarrhea, dysentery, malarial fever, typhoid fever, cholera, and her diseases which, however, would not be expected to occur at this post, and it can contain the eggs or embryos of some form of intestinal worms; it is desirable therefore to pay particular attention to it.

August: In this connection I would state that 28 cases of diarrhea have occurred during the past month amongst the enlisted men of the garrison, and 3 amongst the camp followers, due, in my opinion, to the impure water.

FORT RENO, OKLA.—*Capt. John L. Phillips:* The character of this supply would be greatly improved by a suitable number of cisterns for storing rain water.

Col. B. J. D. Irwin, Medical Director: An artesian well is being constructed at the post with a view to reach the watershed that has its outflow at Caddo Springs; the construction of cisterns before determining the practicability of securing water by that means would be premature at this time.

Capt. Phillips: I understand that the artesian well, so called, which is still only a well in name, was commenced about a year ago, and though there is an appropriation available for extending it several hundred feet deeper, as a source of water supply it is a very uncertain quantity. At present there are three sources of water supply here, and in enumerating I will not consider the three or four cisterns, which, as sources of general supply, are not to be considered. 1st. The river water from the North Canadian, which so far has been abundant, but is objectionable on account of its hardness and the quantity of sand and mud suspended in it. It is useless as potable water, and under ordinary circumstances would be useless for any domestic purposes. 2. The well water from the well on the southwest side of the main parade is another source of supply which was condemned as potable water by chemical analysis several years ago, and under any circumstances would be suspicious on account of the shallowness of the well. 3. The water from Caddo Springs, which is, I believe, considered very good, but on account of the distance of the springs from the post, five and a fraction miles, the procuring of it in but small and insufficient quantities, with the means at command, is impossible, inasmuch as it has to be hauled in small kegs every day by wagon; the only possible suggestion I have to offer in solution of the water problem at this post is one that has been made before, and I believe objected to on account of the expense of the undertaking—that is, to build tanks or reservoirs at Caddo Springs and conduct the water from them to the post by means of a main or mains.

Col. Irwin: As pure water is an essential requisite for a permanent military station Fort Reno should secure a supply at as early a date as possible. The water hauled by wagon from Caddo Springs, 5 miles distant, and on the offside of the turbulent North Fork, Canadian River, which becomes impassible by sudden rise in its volume, should be conveyed to the post by a proper system of piping. An effort to reach potable water by boring has been defeated by the breaking of the boring machine after going down some 400 feet. The contractors have commenced drilling at another point. In view of the heavy rainfall (30.29 inches) within the summer cisterns should be constructed as an auxiliary in supplying water to the post.

FORT STANTON, N. MEX.—*Capt. J. M. Banister, July:* The quality of the water has been poor of late in consequence of surface drainage into the well from which the water supply is obtained. The mouth of the well is on a level with the surface of the ground, and during the heavy rains and freshets which habitually occur during the summer months much organic matter is washed into the well, thus contaminating the water supply. Recently the well was nearly filled with foul water and mud in consequence of a sudden rise of the Bonito. As a consequence bowel troubles have been very prevalent during the past month.

August: During the summer months here the water becomes insufficient in amount and of poor quality. As a result of contamination of the post well by surface drainage and by its being flooded at times during the periodical overflows of the Bonito, and thus filled with foul mud and water, diarrheal disorders have been very prevalent of late. A new well farther from the stream is needed.

Lieut. N. S. Jarvis, December: Work upon the new well has been discontinued for the present, the contract estimate of 45 feet in depth having been reached with but little depth of water.

Capt. J. M. Banister, March, 1892: The new well has been dug to a depth of 59 feet, but a sufficiently large stream has not been encountered. This well should be dug at least 25 feet deeper. I think that a bold stream will be encountered within this distance. The water obtained from the old well evidently comes from the Bonito and not from an independent underground stream.

SAN CARLOS, ARIZ.—*Lieut. Philip G. Wales:* The water for drinking and other purposes is derived from a well 15 feet deep, dug within 300 yards of the San Carlos River near its junction with the Gila, and is ample in quantity. Its quality has not been determined, as no chemical analysis has been made to my knowledge. It possesses a brackish alkaline taste, and contains considerable chlorides (probably due to passage through salt-bearing strata), also organic matter in excess.

There was a large increase in diarrheal diseases over the year preceding Whether this was entirely the result of the impure condition of the water, or wheth other causes were not instrumental in its production, I am not prepared to say. The water, as a rule, found in the Gila Valley is far from satisfactory, and I do not believe even an approximately pure article can be obtained except from artesian wells.

FORT CANBY, WASH.—*Col. C. C. Byrne:* Surface water collected in two tanks and one reservoir, also rain water collected in cisterns. Quality of surface water not good. * * * I am informed that steps are about to be taken by the post commander with a view to a better supply of water from a spring situated nearly two miles from the post.

FORT MYER, VA.—*Maj. R. H. White:* Analysis of the water supplied by the three wells was made at my request at the Surgeon-General's laboratory on October 9, 1889, with satisfactory results in each case. It must be remembered, however, that it is surface water, and liable to give different results at different times. The question may thus arise whether steps might not now be taken to connect Fort Myer with the distributing reservoir of the city of Washington, the relative altitudes of which are 220 feet and 160 feet, respectively.

In a recent special report Surgeon White remarks:

The supply is now so small as to render water too precious for adequate bathing and the use of it is shut off or practically prohibited for twelve hours of the day. * * * The water now supplied to Fort Myer is surface water, which is as variable in quality as in quantity; and is notoriously a prolific source of typhoid fever and other contagious diseases. That the soil through which this water percolates is now and will remain polluted is obvious from its having been the site of an old camp, from the vicinity of the ever more populous Arlington Cemetery, and from the large human and animal population now at Fort Myer.

MOUNT VERNON BARRACKS, ALA.—*Maj. C. E. Munn:* Regarding the water supply, the quality of which has been under discussion, permission was obtained to forward to the Surgeon-General's Office a sample from the reservoir for analysis. The officer to whom this duty was assigned reported the water as being of "very good quality," but, considering the condition of the reservoir, and the old and worn tubing and tanks, a water board was ordered, of which the post surgeon was a member. The board recommended the sinking of a large well, which plan was approved by the department commander, and the well is being sunk by the contractor.

FORT SHERIDAN, ILL.—*Maj. A. C. Girard:* An analysis of the water supply, made by Prof. J. H. Long, College of Pharmacy, Chicago, shows "that the supply is not as pure as it should be, and that the cause is the proximity to the shore of the orifice of the intake pipe." * * * Another possible source of disease is in the water tank in the water tower. The supply pipe originates 10 inches from its bottom, and below it all the sediment in the water is collected as a dark slime, which is no doubt permeated with disease germs. This slime can only be removed by being hoisted in buckets to the top of the tower and thrown out of the window, a laborious, filthy, and incomplete job. The remedy is an outlet at the bottom of the tank, connecting by a branch with the overflow pipe.

Col. Charles R. Greenleaf: Concerning the water supply, Capt. Miller, assistant quartermaster, stated that there was a drainage cap over the end of the supply pipe, and he thought that the character of the water had better be examined at frequent intervals until the authorities were definitely satisfied that the supply pipe was not long enough, when it would be an easy matter to add to it as much length as might be deemed necessary. In view of the facts, and the added one that the examination of the water by Dr. Mew failed to show any evidence of sewer contamination, this suggestion was adopted.

FORT SCHUYLER, N. Y.—*Maj. W. D. Wolverton:* Quality of water supply fair, quantity insufficient, a condition of affairs which, it is expected, will be shortly remedied by an abundant supply of good drinking water furnished in pipes already in the ground from Westchester County.

JEFFERSON BARRACKS, MO.—*Maj. D. G. Caldwell:* The water supply during a portion of the month has been insufficient, but was partially remedied by establishing a temporary pumping station at the junction of the depot and city main. This deficient water supply occurs every year during dry hot weather, and can probably only be prevented by laying a new main from the city reservoir to join the depot main at the city limits; the present city main has so many distributing pipes that the pressure is removed before it reaches the barrack main.

BOISE BARRACKS, IDAHO.—*Capt. H. P. Birmingham:* Complaint having been made that the water supplied by the water company of Boise City smelled badly at times and was unfit for use, I investigated the matter, and found that in those parts of the garrison supplied by terminal pipes, or where the water for any reason was allowed to stand in the pipes for a considerable length of time, the water became turbid and had a disagreeable odor, this condition disappearing if the water was allowed to run sufficiently long. I made a chemical analysis of the water and found, as far as an examination of that kind would enable me to determine, it to be a good potable water, the total hardness representing only 4.91 grains of carbonate of lime per gallon, all of which comes under the head of removable hardness. The organic matter in grains per gallon is .049, and this is of undoubtedly vegetable origin. I believe that the stagnation of water in the pipes and the consequent bad odor are owing to the absence of a "blow off" arrangement for cleansing the pipes and mains, and recommend that the attention of the water company be called to the matter.

DAVIDS ISLAND, N. Y.—*Maj. J. R. Gibson:* Water supply abundant, but during the past two or three weeks of inferior quality, the taste and odor being very unpleasant. The water is supplied by the water company of New Rochelle. In its present condition it can not be considered good potable water.

COLUMBUS BARRACKS, OHIO.—*Capt. A. A. De Loffre:* The quality of the water supplied is not what it should be. It is very hard, which makes it difficult to use for cleaning purposes and objectionable for cooking. I believe it to be a pure water, however, and suitable for drinking.

FORT BRADY, MICH.—*Lieut. Paul Clendenin:* The water for the post is obtained from a hydrant of the Sault de Ste. Marie Water Company situated within 100 feet of the rear of the barracks and carried in barrels, in a wagon in summer and a sleigh in winter, to the various kitchen doors; here it is transferred by means of buckets to other barrels ready for use. Hence it will be seen that the water is handled twice before being placed in a receptacle convenient for immediate use, an expensive, laborious, uncleanly, and unwholesome arrangement. With all the care of frequent cleansing of the barrels and buckets it is well nigh impossible to keep them clean, and the frequency with which the kitchen barrels are filled with new and fresh water depends on the frequency with which they are emptied and cleaned before refilling. These barrels are kept inside the kitchens in winter to prevent their freezing, and are here exposed to the more or less tainted atmosphere incident upon such a place, absorbing the odor and taste of cooking meats and vegetables as well as the emanations from the lungs and skin of the cooks; furthermore there is considerable water spilled in filling the barrels, and this increased by the leakage caused by the warping of the barrels in the warm rooms makes an untidy floor. In summer the barrels are kept out of doors, but here they invite the thirsty dog or other animal to dip in his dirty muzzle, for my observations at several "water wagon posts" lead me to say not that water barrels can not be kept covered, but that they will not. But it is not my purpose to enter upon any argument to prove the disadvantages of this system of water supply but rather to place upon record at this time the exact state of affairs. * * * An investigation led to the discovery of a break in the ingress pipe not far from the shore of the shallow bay through which it runs. I also learned that the water is taken from the ship canal and not from the rapids as I had understood. Last year there was a break in the lock and navigation was delayed for several days, during which the canal was full of waiting vessels. Following this there was a great deal of sickness in the town, 300 cases of typhoid fever being reported. While I am not able to trace a direct connection between the vessels tying up at the source of the city water supply and the sickness the coincidence is, to say the least, remarkable. As this accident may occur again at any time and because I do not think the canal a proper source from which to obtain the water, I respectfully submit that the Government should insist on the extension of the supply pipe of the city water system to the river before entering into a contract with the water company for supplying the new post with water. I feel positive that a suggestion on the part of the proper authorities would have the desired effect, as I understand that the extension referred to has been proposed in the city council and lost only on account of the money not being then available.

CAMP EAGLE PASS, TEX.—*Lieut. Ogden Rafferty:* The water is supplied from the neighboring town, where it is procured from wells that are sunk on the river bank and pumped into tanks in the town. The water is brought into camp each day by the water wagon and left in the barrels at our door. The water although hard is of good quality and seems to meet the demand in quantity.

May: The water has been of unusually hard quality through the month, owing to the height of Pecos River, which empties into the Rio Grande north of this place. In the village of Eagle Pass several cases of dysenteric diarrhea have been attributed to this cause. The water barrels are a constant source of trouble. The covers are frequently knocked off at night and in the morning are found swarming with embryo mosquitoes. The proximity of the town to the camp solves the water question so easily that I would strongly urge that pipes from the city water works be brought immediately into the camp with such terminating facilities as to furnish a bath and a glass of clean water to all.

FORT LEAVENWORTH, KANS.—*Dr. Mew,* analytical chemist, reports on the post supply: It can not be condemned as polluted by sewage until it can be shown by comparison to be in excess of what may be found above the post and at a point free from possible excreta. The albuminoid ammonia is out of all proportion to the chlorine as evidence of contamination and suggests the probability that it is in part due to atmospheric nitrogen compounds and in part doubtless to the decomposition of vegetable matter, a fact which, considered along with the very muddy condition of the water, ought to make it a very fertile cause of bowel disorders. Whatever be the source of the large amount of albuminoid ammonia and holding the question of possible sewage contamination *sub judice*, it is quite certain that such water is not fit for drinking purposes for man or beast.

Samples taken from the river above all possible contamination from the post were reported by Dr. Mew to have been duly analyzed with negative results, the post supply being quite as good organically as that collected above any possible source of contamination from the post; "but that it is unfit for human use in its present muddy state admits of no doubt."

Maj. John Brooke: The ordinary sewage matters are doubtless diluted, oxidized, or otherwise broken up to such an extent as to be inappreciable at the pumping station. With living disease germs it would be different. The excretions from a single case of cholera at the post would, through the water supply, be sufficient to infect the entire post, the military prison, and the town of Leavenworth. The samples for analysis were taken at a time when the river was about at a medium as regards muddiness. When at its lowest the water, as delivered at the post, is turbid. It is always offensive to the sight, and when heated, drawn from a hot-water boiler. the liberated gases make it offensive to the senses of taste and smell. For this water the Government formerly paid $6,000 per year. Last autumn a meter was put in the main and the cost consequently varies. For the last two months it was somewhat less than $500 each, but for the year it will no doubt reach the former sum of $6,000. A supply of better water could be had by pumping from the river above the post and subjecting it to thorough sedimentation; but the number of settling basins required for the purpose would probably make the cost excessive. There would appear to be no known reason why a sufficient supply of good water can not be had by means of wells. The perfect success in that direction attained at Fort Riley will certainly warrant the expenditure of sufficient money to test the matter here. The military prison is interested equally with the post, and I judge that all the ordinary unskilled labor needed to make the experiment could be had from that source. With that assistance the skilled labor and appliances necessary to determine whether or not sufficient water could be found would certainly not involve many thousands of dollars.

Maj. Charles Smart: The analysis submitted in this report presents the ordinary results yielded by the river water at its bad seasons. The amount of organic matter natural to the water is so great that the inflow of the sewage of Fort Leavenworth becomes swamped in the general impurity and can not be determined by chemical analysis. The danger is there, as Dr. Brooke says, but it exists above the post, and sedimenting would give no greater security than taking the water from below the post and sedimenting, as is now done. I believe there are sedimenting basins connected with the Leavenworth supply, although Dr. Brooke does not mention them. The question then becomes the general one of whether the river water is a proper source of supply. The answer is: not if a purer one can be obtained. Memphis had at one time a very impure supply from Wolf River, and plans and estimates were made to bring in the Mississippi water for the relief of the city, and this would have been done, but that the expense of overcoming the engineering difficulties was so great. Although Memphis is much lower on the river than Leavenworth and has consequently a larger quantity of sewage in the water of the river, the citizens were ready to welcome the water as an improvement on the water they were then using. From the sanitary point of view the best water admissible should be procured for Fort Leavenworth, but as financial considerations have necessarily a controlling influence in all such propositions these have to be taken into account. Since the water rental now paid is so high it might be well to consider the possibility of obtaining a local supply from deep wells as suggested in the report.

Col. B. J. D. Irwin, medical director: The water supply received through the city water company is taken from the Missouri River only a short distance below the outlet of the post drainage. It has been analyzed by the Government chemist at Washington and pronounced polluted and unfit for use by man or animals. At this large and important station a supply of pure water is essentially necessary to preserve the health of the station. It is believed that as at Fort Riley this could be secured at a moderate cost of labor by the inexpensive system of well-driving carried out so satisfactorily at that station.

FORT LOGAN, COLO.—*Maj. R. M. O'Reilly, August:* The entire water supply of the post for drinking and cooking purposes as well as for drainage is pumped from the artesian wells. At any time an accident may totally cut off this supply, and the consequences can be readily seen. The main of one of the Denver water companies is within a short distance of here, and as a measure of precaution I recommend that such connections be made as would in an emergency keep the post supplied.

October: On the 16th the water supply failed, one well having apparently caved in and the other being disabled owing to the breaking of a valve at a depth of 282 feet.

On the 21st I addressed another letter to the commanding officer asking his serious attention to the condition of the water supply and recommending that connection be had at once with the main of the water company, and stating that the matter was of vital importance and required immediate action. From the 16th to the present, water for culinary and drinking purposes has been furnished by a water wagon which procured the supply from a common hydrant in the adjacent village. But there has been none for flushing drains, save a limited quantity pumped with great difficulty from the choked well, and to-day it is reported that that source is exhausted. Under these circumstances the water-closets, bath-tubs, sinks, boilers, and water backs are useless. Cooking is badly done on account of the danger of accident to water backs and boilers from hot fires. If the sewers are not choked now they soon will be, and there are cases enough of typhoid fever at the post to make the place poisonous for the future.

Steps were taken to connect the supply system of the post with the Citizens Water Company of Denver.

FORT BROWN, TEX.—*Maj. Calvin De Witt:* The water supply is pumped by steam engine from the river into settling tanks and afterwards distributed in pipes; it is used for all purposes except drinking; distilled water from the ice machine is supplied to the entire garrison for this purpose. The post and its surroundings have not changed since the remarks in the report of the Surgeon-General of the Army, 1889, pages 27 and 28. Since then I am informed by the post surgeon, who has made careful examination of the records from the time he reported for duty, there has been a steady diminution in the percentage of sick to the command. At the date of inspection there was but one enlisted man in hospital for injury, none for disease. Since 1890 distilled water has been supplied for drinking purposes. Ice is and has been freely used by the enlisted men and in the hospital. To this the post surgeon attributes in a great degree this immunity from disease, stating that when the men come into barracks tired and hot from outside duty they find plenty of clean, clear, and cool water to refresh them, and the temptation to cross the fence to neighboring saloons, where cool beer and other alcoholic drinks are sold, is removed, and thus they escape many forms of disabling disease.

FORT RINGGOLD, TEXAS.—*Maj. Calvin De Witt:* The waterworks are very complete and give an abundant supply. The water is pumped from the river into a settling tank (80,000 gallons capacity); when clear, drawn into a tank of similar capacity, but lower in level; thence pumped by a second engine to four distributing tanks of 16,000 gallons each, and conveyed from them by pipes. This water is used for all purposes except drinking; drinking water, which has been given to all the garrison since the fall of 1886, is obtained by a steam condensing coil connected with the ice machine. * * * The post surgeon, Capt. J. E. Pilcher, is of the opinion (based on an examination of the records) that sickness at the post has been reduced at least one-half since the issue of distilled water for drinking purposes, and it has proved to be a most important sanitary measure. He also believes his opinion is confirmed by the fact that it is only after detached service away from the post that there is an increase of sickness, and especially those diseases caused by malaria. He also states that since he assumed charge he could trace all cases of malaria as originating away from the post and not to local causes. The value of distilled water for drinking purposes is evident, and I agree with Capt. George H. Torney, post surgeon at Fort Brown, in the opinion that if the enlisted men, after being heated by drill and fatigue or other duty, could find at their barracks a plentiful supply of this pure, clear, and clean water, made cool and refreshing with pure ice, it would have the great additional advantage of preventing much deleterious beer drinking.

At many other posts the decrease of malarial diseases has been ascribed to the use of a pure water supply. It becomes a question therefore whether it would not be advisable to issue ice-machines with an attached condenser to such posts as have a surface water supply of doubtful purity in order to provide them with pure water for drinking and cooking. I commend this suggestion for favorable consideration.

In connection with the foregoing subjects I desire to submit a recommendation. The construction and improvement of our military posts are matters of so much importance as to merit consideration by boards of officers before commencing work on the plans that may have been presented. Moreover, on account of the sanitary considerations connected with the selection of site, construction of post buildings, with their heating, lighting and ventilation, drainage, sewerage, and water supply, the medical department should be represented on these boards. The special training and experience of the military surgeon give weight to his opinion on almost any question likely to be submitted to such boards in connection with the plans when viewed from the sanitary standpoint. It is better to build well from the first than to have to make alterations in a completed structure. These are always expensive and seldom satisfactory. The approval of a board before final action is taken would tend to eliminate mistakes and lessen the necessity for future changes. I therefore recommend that the plans of all buildings hereafter to be constructed, of alterations to be made, or of sanitary improvements to be instituted at our military posts be submitted to a board of officers, one member of which shall be a medical officer.

FOOD AND COOKING.

Few complaints of the quality of articles of food were reported during the year, and these related only to potatoes and fresh beef. The deterioration of the former was probably in part due to defective storage, while the inferior quality of the latter was the usual consequence of the absence of grazing at certain seasons in the vicinity of some posts in the Department of Arizona.

The preparation and serving of food were, however, the objects of important criticism. There is no doubt that general or post messes lessen waste and give greater variety of diet, other things being equal, than company messes, but the success of both depends on the ability of the cook. With detailed men as cooks the troops will fare better in a company mess than in the larger establishment, because it is easier to find in a company a man who can cook for a small number of men than to find in a garrison one who has the ability to supervise the kitchen of a general mess. When the depot at Davids Island, N. Y., had a competent civilian cook to superintend the work of its general mess there was no complaint as to the quality of the served food, but when the kitchen was left in the hands of untrained and inexperienced men such complaints became of frequent occurrence. The medical officer indeed suggests that unless skilled cooks be provided a return to the system of company messes would be advisable. The depot at Columbus Barracks, Ohio, also appears to have felt the need of competent management and skilled cooks. Another objection to details from the command for the work of a general mess at a large post is that a change of garrison would remove from the post all the men who had gained experience in the management of its mess. At all large posts having general messes there should be permanent assignments of competent men to the duties of stewardship and kitchen superintendence.

A diet table suggested by the post surgeon and modified by a conference with the mess officer is now in use at Fort Sheridan, Ill. It is given below to show the weekly bill of fare at a post where the administration of the general mess appears to have made it a success.

DAVIDS ISLAND, N. Y.—*Maj. J. R. Gibson:* Of late attention has been attracted to the general mess because of frequent complaints of the food. So far as my observation extends the supply of food is abundant, the bread ration especially being liberal and of exceptionally good quality. The causes of complaint seem to be in the preparation of the food and the cooking, which certainly is not up to the standard it was a few months since when a professional civilian cook was employed as chief. In the general mess at this depot 530 men are on an average fed daily. It is scarcely to be expected that this can be done by a force of untrained cooks, without the intelligent supervision of a thoroughly competent and skillful chief. This would seem essential not only in the interest of the consumer, but also to secure an economic use of the ration and thus avoid the otherwise inevitable waste. By some, the cause of complaint is attributed to the method of cooking by steam, alleging that the food is unpalatable and not relished, and here it is, doubtless, where the lack of skill is manifest. Cookery is an art, one not quickly acquired. If it is impracticable to employ skilled labor in the management of this mess, then the only alternative would seem to be to reduce the size of the mess to the capacity of the cooks, not that the less skill is required in the preparation of food for a smaller number, but less confusion would result and more time and care would be allowed in the preparation of the meals. Ordinarily one cook to fifty or sixty men, exclusive of helpers, is the ratio.

Columbus Barracks, Ohio.—*Capt. A. A. DeLoffre:* The food is composed of the usual Army ration and vegetables from the garden. It is abundant and seems to be fairly well cooked. There is a great deal of dissatisfaction among the men in regard to the food. This is due, I believe, to the want of variety, and, I understand, want of proper service. The cooks seem to have a limited experience in the art of cooking, the bill of fare being composed for the most part of baked beef, boiled potatoes and cabbage, beef stews, pork and beans. The chief difficulty at the mess, I believe, is the want of a competent steward and competent cooks.

Fort Riley, Kans.—*Maj. J. Van R. Hoff:* The departure of this command would take out of the mess hall every man familiar with its workings. A new garrison would have to organize at the foundation and learn from experience what has been gained here by nearly three years' trial. I have reason to believe that experience would be a bitter one, and unnecessarily so, since with a permanent personnel (which might be obtained through the instrumentality of the general service) a change of garrison would not leave the mess hall—as it now will—without a single man who knows anything of its workings. I have suggested the general service as a present means of attaining the end in view, but ultimately there should be a regularly organized corps, attached to the Subsistence Department, from which mess-hall and bakery assignments could be made.

Fort Sheridan, Ill.—*Capt. S. R. Stafford, Fifteenth Infantry, in charge of mess:* The diet table prepared by the post surgeon involves the following expenditures per month for food in addition to the ration:

1,000 pounds fresh fish	$60.00
1,050 pounds fresh pork	88.40
800 pounds ham	72.00
640 pounds cheese	76.80
600 heads cabbage	72.00
320 pounds dried fruit	28.80
50 bushels potatoes	25.00
12,000 pounds ice	25.00
64 gallons milk	10.60
Total	458.60

One hundred dollars only can be depended upon as savings from the ration, consequently an indebtedness of nearly $400 must be incurred in anticipation of profits to be made in the post exchange. The credit system may be a good one for general trade, but it is not the proper one for an army mess. The company commander does not expend money until savings have been made, and I believe that the statement would also apply to the officer in charge of the hospital mess fund. For reasons of economy and expediency the officer in charge should not be hampered by a fixed diet table. It often happens that an accumulation of cold meat, etc., must be used for hash; if hash is not authorized by the diet table the meat must be thrown away. The table calls for hominy and sirup; on all occasions when it has been supplied nearly the whole quantity cooked was thrown away. The post surgeon suggests, "Try gravy with it." This is not only a departure from the diet table, but also suggests the necessity for experiment. Attention is invited to the fact that the cooks employed in the mess are unskilled. The chief cook informs me that to get a sufficient number of griddle cakes for supper he must commence to bake them immediately after dinner. Cabbage, which the table calls for frequently, is too expensive to purchase at present market rates.

In view of the above, and in order to avoid repetition of the condition of indebtedness from which the mess has just been relieved, I would respectfully recommend that the diet table be so revised as to show a reduction of at least $100 in the total expenditures for extras, and that the officer in charge may be at liberty to make such changes in the table as are made necessary by the conveniences for supply, conditions of the markets, and the amount of money available for the purchase of supplies.

Maj. A. C. Girard: I admit the correctness of Capt. Stafford's remarks, although the cost of extras is figured a little too high, in my opinion, and the savings estimated too low (last month they were about $150).

In view of the great complaints formerly made about the mess, it appeared to me that restoration of the mess fund to a healthy condition should be gradual, hence I suggested the diet table.

I believe the officer in charge of the mess is correct in claiming the advisability of a certain amount of latitude, but it should be exercised more in the direction of interchange than reduction.

As to the griddle cakes, I admit their impracticability, and would suggest corn bread as a substitute.

I would be glad to meet the mess officers in a revision of the diet table, so as to make the desired reduction in cost.

Maj. A. C. Girard: After conference with the mess officers and with their full approval of its practicability, I have the honor to submit inclosed a revised diet table, with the recommendation that it remain in force until changes appear desirable.

It differs from the other diet table in the omission of fresh fish, ham, and one day's cheese (substituting therefor parts of the ration), and in a certain latitude being given the mess officers in the form of preparation of certain dishes.

As it now stands, I am assured by the mess officers that it can be strictly adhered to. The peculiar tastes of the enlisted men as to preparation and variety have been carefully considered.

Diet table.

Day.	Breakfast.	Dinner.	Supper.
Sunday	Pork sausage, mush, bread, and coffee.	Roast pork, potatoes, pudding, bread.	Plum dough, tea, and bread.
Monday	Baked hash, bread, and coffee.	Rice soup, boiled beef, turnips, potatoes or onions, bread.	Corned beef, corn bread, tea.
Tuesday	Codfish hash, potatoes, bread, and coffee.	Bean soup, bacon or pork, potatoes, and bread.	Irish stew, tea, and bread.
Wednesday	Fried bacon or pork, corn-meal mush, bread, and coffee.	Roast beef, mutton or veal, potatoes, apple sauce, bread.	Stewed fruit, corn bread, cheese, tea.
Thursday	Baked hash, bread, and coffee.	Pork and beans, bread, and coffee.	Corned beef, fried potatoes, tea, and bread.
Friday	Codfish hash, bread, and coffee.	Pea soup, boiled beef, vegetables, bread.	Irish stew, tea, and bread.
Saturday	Beefsteak, potatoes, bread, and coffee.	Potato soup, roast beef, veal or mutton, potatoes, bread.	Corned-beef hash, tea, and bread.

I have also the honor to recommend, after consultation with the mess officers and careful consideration of the financial prospects of the mess, that in order to give it the great benefits accruing from the use of cows and pigs, for the purchase of which there is but slight prospect in the near future if the savings of the mess have to be depended on, that each company commander be directed to make a loan of $75 to the mess for this specific purchase from his company fund, this loan to be repaid pro rata as the profits from the investment accrue or, in case of removal of an organization, to be repaid from the mess fund.

I am informed that all, or nearly all, companies have this sum of money on hand, and it would be clearly to the benefit of the men if this money was utilized—the capital remaining still as a safe investment of the company fund.

CLOTHING.

The most important points to be noted under this heading are the insufficiency and unsuitability of the underclothing. On account of our great extent of territory and range of temperature, the underclothing is both too heavy and too light. It is too heavy for the southern posts, particularly in summer, giving rise to much irritation of the skin and consequent suffering and loss of sleep. It is too light for winter wear, especially at our northern posts, where the canton flannel drawers give almost no protection to the legs, subjecting the men to rheumatic pains, or to dangerous internal inflammations, unless they protect themselves by the clumsy expedient of wearing two pairs, or by the expensive one of purchasing woolen garments. The importance of this subject justifies the recommendation that woolen drawers for winter, and lighter undershirts for summer wear, be issued by the Quartermaster's Department.

HABITS.

The habits of the men as expressed by the rates for venereal disease and alcoholism have not improved materially during the past year, but the tendency is however towards continued improvement. See page 47. Credit for beneficial effects is given to the canteens at several posts. Indeed, Fort Bayard, N. Mex., is the only one from which has come an adverse criticism; but the increase in the rate for alcoholism at this post has been small, 9.43 admissions in the past year, per thousand of strength, as compared with 6.85 in the previous year.

FORT MCPHERSON, GA.—*Maj. P. J. A. Cleary:* The habits of the men are cleanly and soldierly, and I may add remarkably sober. I have been at this post since November last and witnessed several pay days, and have not yet heard boisterous noise or talk. A few years back a garrison of this size would have filled the hospital after each pay day; at this post a case of alcoholism in hospital is very rare, and there has not been a case of alcoholic delirium since I came here. I believe this condition is largely if not wholly due to the excellent post canteen, or exchange; there may be other agents, but I believe this the most efficient.

FORT WASHAKIE, WYO.—*Lieut. Charles F. Mason:* The good influence of the canteen becomes more apparent with the lapse of time, by lessening the number of cases of intoxication, through its savings improving the mess, and by its general effect upon the morals of the men. I am convinced it has materially lessened the number of days lost to the Government through sickness and injury.

JACKSON BARRACKS, LA.—*Capt. W. L. Kneedler:* Much of the temporary and permanent disability at this post is produced by alcoholic drinks and venereal diseases. Although for various causes the first attempt to establish a canteen failed I believe that a properly conducted canteen would lessen these evils.

FORT BAYARD, N. MEX.—*Capt. E. T. Comegys:* The habits of the men are not so good since the establishment of the post canteen.

FACILITIES FOR PERSONAL CLEANLINESS.

Most of our large posts are provided with lavatories and facilities for bathing with comfort, either in a bathroom attached to each set of company quarters or in a post bath house. The latter is recommended for all large and permanent posts because better facilities can be procured for the outlay that would be required to support a number of company bathrooms. Two objections have been raised against the post bath house—that its distance would deter the men from bathing as frequently as they do in their company rooms, and that they would be liable to catch cold after a hot bath in returning to quarters in cold weather. The inconvenience of having to go a short distance for his bath would scarcely prevent any man from bathing who was desirous of doing so, and those who are not desirous of doing so would be likely to neglect advantages of this kind that were nearer at hand. The danger of catching cold in returning may be avoided by the use of the tepid and cold spray after a hot bath.

At Fort Sam Houston, Tex., the post surgeon recommended the removal of the bath tubs from the company barracks, and the erection of a post bath house. This was disapproved by the post commander on the ground that the existing arrangements had given entire satisfaction. It then appeared that the object of the medical officer was not so much the establishment of a general bath house as the removal of the company bathrooms from the basement of the men's quarters

Dampness, and the possibility of defective traps, he considered objectionable underneath the dormitories of the men, especially in winter when doors and windows were closed. His recommendation was therefore changed to the erection of bathrooms and lavatories immediately in rear of each barrack building. At Fort Sherman, Idaho, it appears that the general bath house is excellent in all its arrangements, with the exception that it is provided with only one tub for each company. The post surgeon suggested extra tubs or sprays, but a doubt as to the advisability of putting any additional weight on the building led to the disapproval of his recommendation. At Fort McKinney, Wyo., there is a post bath house, but when the water in the pipes freezes in the winter it becomes useless.

At several of the posts the accommodations are of the most primitive character. Camp at Eagle Pass, Tex., for instance, has one bath tub for a troop of cavalry, and when a man desires to have what he calls a general police he makes a number of journeys with a bucket between the bath tub and the water barrels outside. Most of the men make no use of these bathing privileges, but, weather permitting, take to the river for their bath. At Fort Spokane, Wash., Fort Du Chesne, Utah, Fort Niobrara, Nebr., Newport Barracks, Ky., and Fort Schuyler, N. Y., the arrangements for bathing are inadequate and comfortless to say the least. At San Diego Barracks, Cal., the company has but one bath tub for 50 men, and the kitchen can spare hot water for the bathroom only a few hours daily. One small circular tub is provided for a company at San Carlos, Ariz. It is true the Gila River is convenient, but its water is usually too muddy to be used as an aid to personal cleanliness. Fort Ringgold, Tex., has good company bath houses with two tubs in each but no provision for hot water. Fort Grant, Ariz., began the year with poor accommodations and no hot water, but in July a post bath house was constructed and immediately thereafter there was an end to all complaints about the personal uncleanliness of the men. Steps have recently been taken by the Quartermaster's Department to provide Fort Washakie, Wyo., with the necessary bathing facilities. At Fort Brady, Mich., Capt. Paul Clendenin made an earnest effort to procure bathing accommodations for the men, ultimately urging that in default of bathrooms at the post an arrangement should be made for personal cleanliness by contract at Government expense with some bathing establishment in town.

FORT SHERMAN, IDAHO.—*Maj. A. A. Woodhull:* The bath house here is the best in its general arrangement of any that I have seen in the Army. But it is perfectly possible to double its capacity with no other expense than that for tubs, and, as one tub for a large company is hardly sufficient, I recommend that such estimates be made. A slight screen between the tubs will secure the desired privacy. If tubs can not be purchased or are not desired it is perfectly practicable to add to each bathroom conveniences for two cold and warm shower baths. For mere purposes of cleanliness a moderate shower of warm water is the most serviceable and the least expensive. Two cells for such purposes would treble the bathing capacity of each room.

In an indorsement on this report the post commander states:

The bath-house system works admirably. I would much prefer having the system as it is, as any additional tubs and pipes would of necessity increase the weight of the structure, and I believe that is to be avoided by all means.

FORT MCKINNEY, WYO.—*Lieut. W. N. Suter:* There is no suitable provision made in most of the company quarters for the men to bathe. Some of those who have come for medical treatment have been in an uncleanly condition. They all stated that they had no means of bathing. The bath house is not open, owing to the freezing of the pipes, but in cold weather it is not altogether safe to allow its use, as men are liable to contract illness by taking hot baths and going at once a considerable distance in the cold air to their quarters.

CAMP EAGLE PASS, TEX.—*Lieut. Ogden Rafferty:* The quantity of water, although sufficient for cooking, does not meet the demand for bathing through the summer months. There is but one bath tub for the troops; the water for it is carried by the bather in a pail from the barrels outside the building. Most of the troops discard this bath privilege throughout the year, preferring the river with its attending discomforts.

FORT SCHUYLER, N. Y.—*Maj. W. D. Wolverton:* The bathing facilities in barracks are insufficient, being not provided with sufficient water, light at night defective, and tubs greatly in need of renovation by being made smooth inside and repainted. A modern bathroom for the troops, containing ten tubs and twelve closets, is urgently needed.

NEWPORT BARRACKS, KY.—*Capt. Henry I. Raymond:* The attention of the commanding officer is invited to the fact that the bathing facilities of this garrison are such that very few of the enlisted men avail themselves of the use of the bath rooms owing to scarcity of warm water or for other reasons. Not a few of the men, it is believed, either seek bathing facilities elsewhere or else do not attend properly to their ablutions, which should be obligatory at least once a week and under such conditions that all can be accommodated and provided for within the company bath rooms.

FORT NIOBRARA, NEBR.—*Lieut. J. D. Poindexter:* The bath tubs in several of the barracks are so leaky as to be unfit for use. In troops E and F the tubs have never been used by the present garrison, the men preferring to go to the river or to use a bucket. These tubs, together with several others, are foul and uninviting, as are likewise the rooms in which they are placed.

FORT DU CHESNE, UTAH.—*Capt. S. Q. Robinson:* Attention is again invited to the scanty and otherwise defective facilities for ordinary morning ablutions and general bathing. It is respectfully recommended that plans and estimates be forwarded to remedy this. It is certainly practicable to construct in such a manner that if the long-expected water system were introduced no great expense or change would be required to connect it.

The Uintah is available for five months in the year, but the bottom is rough and the mosquitoes swarm about the banks in the early summer. Combining the factors of heavy knit undershirts not removed at night, two drills daily, considerable fatigue, stables to attend for the colored troops, and high temperature, with, for the past few days, considerable atmospheric humidity, the best facilities that could reasonably be expected would be overtaxed. A few washtubs, often personal property, and a borrowed bath tub for the use of 150 men cut no figure. Even these, except in Company D, whose quarters have an extemporized drain, have to be filled with buckets and emptied in the same manner. When hot water is required it has to be warmed on the heating stoves in the small bath rooms, which consumes much time and raises the temperature of the room to an undesirable degree. The question of the water system having been decided in the negative, I respectfully recommend, without attempting to indicate in what manner it can best be done, that the necessary steps be taken as soon as practicable to remedy this unsanitary state of affairs. It is respectfully suggested that the construction of a platform at the most suitable place on the river would be something in this direction immediately possible.

FORT SPOKANE, WASH.—*Maj. V. B. Hubbard:* The bathing facilities for enlisted men are entirely inadequate for their number. I would urgently recommend that measures be adopted as soon as practicable to remedy this unsanitary condition.

SAN DIEGO BARRACKS, CAL.—*Maj. S. M. Horton:* The post guardhouse has neither water-closets, urinal, nor lavatory. These are very much needed for the reason that urinals and water-closets of the company are nearly twice the length of the entire barracks away from the guardhouse and the lavatory of the men of the company is distant from it. * * * The only bath tub which the company has is used by 50 men in the company. Owing to the necessity of the kitchen for hot water for cooking and washing dishes three times a day, there only remain but five hours in each day in which it is convenient for men to get hot water for bathing.

Col. J. R. Smith, Medical Director: Until the question of a new post at San Diego is settled, I do not think expenditure necessary to carry out the recommendation of the post surgeon.

SAN CARLOS, ARIZ.—*Capt. R. W. Johnson:* The bathing facilities for the command are entirely inadequate; one small circular tub does duty for one entire company and the other companies are not much better supplied. If the water of the Gila River were not so dirty and muddy the need of bath tubs would not be so apparent, but under existing circumstances I think two large tubs are necessary and would add materially to the comfort and convenience of the men.

FORT RINGGOLD, TEX.—*Capt. Jas. E. Pilcher:* The bathing facilities are good, each company and the hospital being provided with a bath house containing two tubs and a shower bath, and for summer use they are entirely sufficient. But during the cooler half of the year the water becomes too cold for either the plunge or the shower, and at this time the absence of suitable hot-water supply becomes a fatal defect.

The provision of supplying hot water in the bathing houses and the quarters at the earliest possible moment is strongly urged.

FORT GRANT, ARIZ.—*Capt. W. H. Arthur:* There is a lack of personal cleanliness among the men of the command, owing to the absence of proper bathing facilities. The difficulty in procuring hot water is one of the main causes. The boiler attached to the water back of an ordinary kitchen range is entirely inadequate to supply the amount of hot water required for the frequent bathing of the men, and many of the men, rather than heat their own water or bathe in cold water, dispense with bathing their bodies except at long intervals. The miserable bath houses with which the men here are accommodated undoubtedly tend to produce a feeling of aversion to the bath tub.

In my opinion it is very necessary that some steps should be taken without delay to enable the men to get an occasional bath. I have never seen soldiers brought to the hospital in a filthier condition than some of the cases at this post, and the men themselves can not be blamed, for they are almost entirely without bathing facilities.

FORT WASHAKIE, WYO.—*Lieut. Chas. F. Mason:* I would again call attention to the lack of any bathing facilities at the post. This want is an urgent one and is felt most keenly during the winter months, when it is often impossible for the men to reach the hot springs, 2¾ miles distant. I recommend that a stationary bath tub be placed in each set of officers' quarters, and that spray baths, with at least two compartments for each, be placed in every barrack. Of course these changes would necessitate the introduction of a sewerage system, but this could be very simple, a straight pipe in rear of the barracks, emptying into the river and provided with an arrangement for flushing from the pump house. Another similar and separate pipe should be placed in rear of the officers' quarters.

Col. Dallas Bache, Medical Director: Bathing facilities should be furnished to this post for the officers and their families by bathrooms in their houses and for the enlisted men by a bath house for general use. Such an establishment concentrates the distribution of water, cold and hot, and facilitates the removal of waste.

FORT BRADY, MICH.—*Capt. Paul Clendenin*: The supply of water appears to be sufficient for present uses, but if the bathing facilities were at all adequate the water supply would be entirely insufficient. As previously reported there is but one bath tub to each company of about sixty men. The result is that the men are compelled to go down town and bathe at some barber shop at their own expense. I most respectfully maintain that this is not right. The men are compelled by the regulations as well as common decency to keep their persons clean; and still there is no adequate provision made for them to do so. I earnestly recommend that a bath house containing at least six, and better eight, tubs be provided at the earliest practicable date, with proper facilities for heating the water and heating the room Men will bathe frequently enough (at least such has been my observation) if the means for taking a bath are made convenient and comfortable. And taking a bath, especially a sponge bath, in a drafty room, no matter how well heated, in this part of the country, with the temperature in the neighborhood of zero, is anything but a luxury. There are no facilities whatever for bathing in the officers' quarters. We are compelled for ourselves and our families to make arrangements in the town for bathing at hotels or other private establishments, because, as indicated above, it is impossible to take a satisfactory bath in the quarters. As far as I can learn from unofficial conversations with the officer in charge of the construction of the new post at this place it will be fully two years before the new quarters are ready for occupancy. I know how difficult it is to obtain anything for a post that is doomed to speedy abandonment; still it does appear to me that two years of use would justify the expenditure of a sufficient sum of money to put in very convenient bath tubs in each set of quarters. The outlet for waste water could be arranged with a very sharp fall and thus obviate the danger of the waste pipe freezing, particularly as the water would always be hot.

A very comfortable bath house could be built for the enlisted men. Such a place should have six tubs and two jet or shower baths. The water could be heated in a large reservoir on the heating stove, or, if the water is brought into the post, one of the many special stoves made for heating bath water by its being forced through coils of pipe inside the stove and thence into an upright reservoir could be used to better advantage. The reservoir should hold about 200 or 250 gallons. The room should be kept well heated and the men instructed to pass from the hot bath to the shower and cool their bodies gradually by beginning with a tepid spray and slowly turning on the cold water—this to prevent catching cold by going directly from a hot bath into the cold air, a thing which they are now compelled to do.

In October Capt. Clendenin recommended that the men should be provided with means for cleanliness by contract with some establishment in town at Government expense.

ATHLETIC EXERCISES.

I desire here to urge again and earnestly the recommendation made in my last annual report, that at each post a systematic course of athletic exercises be instituted to improve the physique of the men. The recruits are below par, and although drilling will set them up individually and move them in accord, it by no means effects a thorough development of all the physical powers. Besides, drills after a time become monotonous and, being a task, fail to interest the men. A graded course in gymnastics under the supervision of a qualified officer would give us soldiers who, besides being able to march, carry a rifle, and use it with precision, would be able to run, leap, vault, swim, scale walls, hurl an extemporized missile with deadly force, wrestle with an enemy, or shoulder a wounded comrade and carry him out of danger. Young men take pleasure in those exercises that develop their muscular powers, and as the athlete cares more for his training than for vicious indulgence such a course would reduce the prevalence of drunkenness to a minimum.

FORT MISSOULA, MONT.—*Lieut. Charles E. Woodruff:* Having no amusement rooms, and caring little for reading, the men spend much time among the adjacent rum shops. Their habits might be improved by the construction of a gymnasium and proper lounging or amusement rooms, the latter to be as addition to barracks.

FORT RILEY, KANS.—*Maj. John V. R. Hoff:* My observation of the general appearance and physique of the men of this command has still further impressed me with the advantages to be derived from a properly equipped and conducted gymnasium here. It should go without saying that a soldier (I mean the typical soldier) must be an athlete, and yet, save through the instrumentality of uninteresting garrison routine, drill, fatigue, guard, the post offers no facilities for or inducements to the athletic training of the officers or enlisted men. It is a rather astonishing fact that while all the rest of the world has gone into athletics, the Army, in this respect, remains just where it was, or is even worse than fifty years ago. Certainly there must be something in physical training or it would not have taken such a hold upon the people and entered so largely in the education of our youth. A half century ago athletic contests were not known in the schools and colleges of our country, but in this generation these contests have become famous the world over. But who ever heard of athletic contests in our service? There is no encouragement, no facilities. Drill is a task. It certainly does not give pleasure to the average enlisted man, and is consequently a labor, while exercise to be most profitable must be pleasurable, a relief from the routine of the endless monotony of garrison duty.

APPENDED PAPERS.

In closing, I have the honor to invite attention to a series of tables which give in detail the statistical data on which the statements of this report are based. They consist of—

I. A numerical view of the effects of diseases and injury on the Army during the calendar year 1891, as compared with the corresponding data of the year 1890 and of the decade ending December 31, 1889.

II. The relative sickness of the troops, white and colored, in the various military departments.

III. The military posts in each department, alphabetically arranged, with mean strength, admissions for disease and injury; also deaths and discharges, with ratios per thousand of strength for admissions and noneffectiveness, the averages of daily sickness, and the meteorological data for the year 1891.

IV. A general view of the results of disease and injury at each of the various military stations, arranged in the order of their mean strength.

V. Twenty posts having the highest rates of admission for the year; the said rates compared with those of 1886–'90, inclusive.

VI. Twenty posts having the highest rates of noneffectiveness during the year; the said rates compared with those of 1886–'90, inclusive.

VII. Twenty posts having the highest admission rates for disease, excluding venereal diseases, vaccina, and alcoholism, together with their ratios for deaths, discharges, and constant noneffectiveness; also the corresponding average rates of the Army.

VIII. Twenty posts having the highest noneffective rates for disease, excluding venereal diseases, vaccina, and alcoholism, together with the average number sick daily and average duration of each case; also the corresponding average rates of the Army.

IX. The military posts in each department, showing the rates of admission, death, discharge, and noneffectiveness for disease, not including venereal diseases, vaccina, nor alcoholism.

X. The monthly prevalence of disease among the white, colored, and Indian troops of the Army.

XI. The rates, per thousand of strength, of admission, death, discharge, and noneffectiveness of the Army and of the troops in the several departments for the year, as compared with those of the decade 1880–'89, and of certain foreign armies.

XII. Admission rates for specific febrile diseases in various armies.

XIII. Distribution of specific febrile diseases at United States military posts during the year.

XIV. The distribution of pneumonia at United States military posts during the year.

XV. Twenty posts giving the largest admission rates for malarial diseases, rheumatism, diarrheal and venereal diseases, respectively.

XVI. Twenty posts giving the highest noneffective rates for malarial diseases, rheumatism, diarrheal and venereal diseases, respectively.

XVII. The prevalence of alcoholism at the various posts and its influence on the effective force of the garrison.

XVIII. Showing the loss and gain to the hospital corps for the year ending June 30, 1892.

XIX. The causes and ratios of rejection among 35,050 recruits examined during the year, white, 23,725; colored, 1,325.

Tables showing the relation of certain classes of disease and of certain specified diseases to arm of service and to the age, nativity, and length of service of the individual have not been prepared this year on account of the want of certain necessary data. These will be procured and the tables submitted with the next report from this office.

Respectfully submitted.

C. SUTHERLAND,
Surgeon-General.

HON. STEPHEN B. ELKINS,
Secretary of War.

APPENDED PAPERS.

STATISTICAL TABLES.

TABLE I.—*A numerical view of the effects of disease and injury in the Army during the calendar year 1891, as compared with the corresponding data from the reports of 1890 and of the decade 1880–'89.*

United States Army.	White.	Colored.	Indians.	Total.
Average strengths as shown by returns of the Adjutant-General	*23,896	*2,251	*313	*26,460
as shown by reports of the medical department	†20,909	†2,064	†296	†23,269
All admissions to sick report during the year	27,970	3,255	532	31,757
treated in hospital	13,377	1,631	185	15,193
treated in quarters	13,751	1,463	346	15,560
treated in field	842	161	1	1,004
Ratios of all admissions per 1,000 of mean strength	1,337.70	1,577.03	1,797.30	1,364.78
for the previous year	1,347.28	1,732.79	....	1,384.25
for the preceding decade	1,482.88	1,619.34	....	1,496.08
Admissions for disease	22,921	2,614	430	25,965
ratios per 1,000 of mean strength	1,096.23	1,266.47	1,452.70	1,115.86
for the previous year	1,110.59	1,422.98	....	1,140.54
for the preceding decade	1,241.13	1,337.87	....	1,250.49
Admissions for injury	5,049	641	102	5,792
ratios for 1,000 of mean strength	241.47	310.56	344.59	248.91
for the previous year	236.69	309.81	....	243.71
for the preceding decade	241.75	281.48	....	245.59
Ratios per 1,000 of mean strength of cases treated in hospital	639.77	790.21	625	652.93
of cases treated in quarters	657.66	708.82	1,168.92	668.70
of cases treated in field	40.27	78	3.38	43.15
Number constantly noneffective during the year	870.86	91.07	15.50	977.43
ratios per 1,000 of mean strength	41.65	44.12	52.36	42.01
for the previous year	42.19	47.66	....	42.71
for the preceding decade	43.50	43.44	....	43.49
Number of days lost on account of sickness during the year	317,866	33,239	5,657	356,762
average for each man of the Army	15.2	16.1	19.1	15.3
for the previous year	15.4	17.4	....	15.6
for the preceding decade	15.9	15.9	....	15.9
Average number of days each case was treated	11.4	10.2	10.6	11.2
for the previous year	11.4	10	....	11.3
for the preceding decade	10.7	9.8	....	10.6
Average days treatment for patients returned to duty	9.99	8.9	10.16	9.88
discharged for disability	77.98	99.58	....	79.84
who died	16.11	36.31	37.50	17.83
Number of discharges for disability	412	43	1	456
ratios per 1,000 of mean strength	17.24	19.10	3.19	17.23
for the previous year	22.43	28.61	....	23.01
for the preceding decade	31.42	30.99	....	31.37
Number of discharges for disease	340	42	1	383
ratios per 1,000 of mean strength	14.23	18.66	3.19	14.47
for the previous year	20.48	22.65	....	20.69
for the preceding decade	27.78	26.57	....	27.66
Number of discharges for injury	72	1	....	73
ratios per 1,000 of mean strength	3.01	.44	....	2.76
for the previous year	1.95	5.96	....	2.32
for the preceding decade	3.64	4.42	....	3.72

* Used in computing the ratios of deaths and discharges for the whole Army.
† Used in computing all ratios for the Army except those of deaths and discharges.

TABLE I.—*A numerical view of the effects of disease and injury in the Army during the calendar year 1891, etc.*—Continued.

United States Army.	White.	Colored.	Indians.	Total.
Number of deaths from all causes	195	16	2	213
ratios per 1,000 of mean strength	8.16	7.11	6.39	8.05
for the previous year	8.40	11.52	....	8.69
for the preceding decade	8.58	11.01	....	8.62
Number of deaths from disease	119	13	1	133
ratios per 1,000 of mean strength	4.98	5.78	3.19	5.03
for the previous year	4.88	8.74	....	5.25
for the preceding decade	5.75	7.19	....	5.89
Number of deaths from injury	76	3	1	80
ratios per 1,000 of mean strength	3.18	1.33	3.19	3.02
for the previous year	3.52	2.78	....	3.45
for the preceding decade	2.83	3.83	....	2.92

TABLE II.—*The relative sickness among the troops, white, colored, and Indian, in the various military departments during the year 1891.*

Army by departments.		Mean strength of command.	Admissions during the year 1891.						Admission rate per 1,000 of mean strength.	Troops per 1,000 of mean strength constantly noneffective from sickness.
			Quarters.	Hospital.	Field.	Disease.	Injury.	Total.		
East	W...	5,999	4,759	4,418	11	7,778	1,410	9,188	1,531.59	42.58
	C....	122	47	182	....	192	37	229	1,877.05	65.42
	I....	50	41	49	....	72	18	90	1,800.00	57.53
	T ...	6,171	4,847	4,649	11	8,042	1,465	9,507	1,540.59	43.16
Missouri	W...	3,643	2,519	2,175	51	3,899	846	4,745	1,302.50	39.97
	C....	77	42	82	....	98	26	124	1,610.39	61.90
	I....	8	....	1	....	1	....	1	125.00	34
	T ...	3,728	2,561	2,258	51	3,998	872	4,870	1,306.33	40.34
Dakota	W...	2,712	1,781	1,463	230	2.757	717	3,474	1,280.97	37.54
	C....	401	220	266	14	398	102	500	1.246.88	31.08
	I....	80	74	39	1	95	19	114	1,425.00	38.01
	T ...	3,193	2,075	1,768	245	3,250	838	4,088	1,280.30	36.76
Platte	W...	3,099	1,665	1,896	376	3,235	702	3,937	1,270.41	38.68
	C....	518	358	508	145	801	210	1,011	1.951.74	35.90
	I....	73	23	59	....	63	19	82	1,123.29	29.69
	T ...	3,690	2,046	2,463	521	4,099	931	5,030	1,363.14	38.11
Texas	W...	1,644	1,012	1,331	63	1,933	473	2,406	1,463.50	45.68
Arizona	W...	1,259	846	655	12	1,226	287	1,513	1,201.75	39.59
	C....	940	796	591	2	1,123	266	1,389	1,477.66	43.79
	I....	83	207	32	....	193	46	239	2.870.52	86.48
	T ...	2,282	1,849	1.278	14	2,542	599	3.141	1,376.42	43.03
California	W...	1,108	614	654	74	1,041	301	1,342	1,211.19	44.32
Columbia	W...	1,410	555	771	25	1,038	313	1,351	958.16	34.28
	I....	2	1	5	....	6	....	6	3,000.00	89.04
	T ...	1,412	556	776	25	1,044	313	1,357	961.05	34.36
Hot Springs, Ark.	W...	35	....	14	....	14	....	14	....	....
	C ...	6	....	2	....	2	....	2	....	....
	T ...	41	....	16	....	16	....	16	....	....
At large: Miscellaneous deaths and discharges.	W...	....	....	....	....	....	....	....	....	....
	C...	....	....	....	....	....	....	....	....	....
	T ...	....	....	....	....	....	....	....	....	....
Total for the Army.	W...	20,909	13,751	13.377	842	22.921	5,049	27,970	1,337.70	41.65
	C....	1,064	1,463	1,631	161	2,614	641	3,255	1,577.03	44.12
	I....	296	346	185	1	430	102	532	1,797.20	52.36
	T ...	23,269	15,560	15,493	1,004	25.965	5,792	31,757	1,364.78	42.01

TABLE II.—*The relative sickness among the troops, etc.*—Continued.

Army by departments.		Deaths.	Annual death rate per 1,000 of mean strength.	Discharged for disability.	Annual discharge rate per 1,000 of mean strength.	Average duration of treatment among patients—			Death rate per 1,000 of admissions.	Discharge rate per 1,000 of admissions.	Recoveries per 1,000 of admissions.	Average sick daily.	Average duration of treatment among all admissions.
						Who died.	Who were discharged for disability.	Who recovered.					
East	W	44	7.33	108	18.00	16.3	61.9	9.2	4.79	11.75	940.79	255.46	10.1
	C	1	8.20	3	16.39	22.0	79.7	11.7	4.37	13.10	917.03	7.98	12.7
	I	1	20.00	......	......	73.0	......	10.1	11.11	......	933.33	2.88	11.7
	T	46	7.45	111	17.99	17.6	62.4	9.3	4.84	11.68	940.15	266.32	10.2
Missouri	W	30	8.23	60	16.47	12.3	86.4	9.7	6.32	12.64	953.85	145.62	71.2
	C	1	12.99	3	38.96	10.0	54.7	11.0	8.06	24.19	911.29	4.77	14.0
	I	......	......	......	......	......	......	1.0	......	......	1,000.00	......	1.0
	T	31	8.32	63	16.90	12.2	84.9	9.7	6.37	12.94	952.77	150.39	11.3
Dakota	W	18	6.64	38	14.01	23.2	94.0	9.2	5.18	10.94	959.99	101.82	10.7
	C	4	9.96	6	14.96	28.3	135.2	7.6	8.00	12.00	968.00	12.46	9.1
	I	......	......	......	......	......	......	8.9	......	......	912.28	3.10	9.9
	T	22	6.89	44	13.78	23.4	99.6	8.7	5.38	10.76	959.64	117.38	10.5
Platte	W	46	14.84	31	10.00	10.0	92.9	10.2	11.68	7.87	954.53	119.87	11.1
	C	3	5.79	5	9.65	22.0	78.0	6.3	2.97	4.95	965.16	18.60	6.7
	I	1	13.70	1	13.70	2.0	......	10.0	12.20	12.20	951.22	2.17	9.6
	T	50	13.55	37	10.03	10.6	88.4	9.4	9.94	7.36	960.64	140.63	10.2
Texas	W	18	10.95	32	19.46	35.1	60.9	9.5	7.48	13.30	963.42	75.09	11.4
Arizona	W	8	6.35	25	19.86	24.6	81.5	9.7	5.29	16.52	957.70	49.84	12.0
	C	7	7.45	19	20.21	55.1	86.9	9.0	5.04	13.68	954.64	41.16	10.8
	I	......	......	......	......	......	......	10.8	......	......	991.63	7.18	11.0
	T	15	6.57	44	19.28	38.9	83.9	9.5	4.78	14.01	958.93	98.18	11.4
California	W	8	7.22	21	18.95	.8	65.9	11.5	5.96	15.65	960.51	49.10	13.4
Columbia	W	12	8.51	31	21.99	24.6	79.2	10.7	8.88	22.96	954.11	48.34	13.1
	I	......	......	......	......	......	......	13.3	......	......	666.67	.18	10.8
	T	12	8.50	31	21.95	24.6	79.2	10.7	8.84	22.84	952.84	48.52	13.0
Hot Springs, Ark	W	1	......	25	......	51.0	239.4	174.1	......	......	......	25.73	......
	C	......	......	4	......	......	256.5	162.7	......	......	......	6.09	......
	T	1	......	29	......	51.0	241.7	171.6	......	......	......	31.82	......
At large: Miscellaneous deaths and discharges.	W	10	......	41	......	......	......	......	......	......	......	......	......
	C	......	......	3	......	......	......	......	......	......	......	......	......
	T	10	......	44	......	......	......	......	......	......	......	......	......
Total for the Army.	W	195	8.16	412	17.24	16.1	78.0	10.0	7.01	14.73	953.27	870.86	11.4
	C	16	7.11	43	19.10	36.3	99.6	8.9	4.92	13.21	966.00	91.07	10.2
	I	2	6.39	1	3.19	87.5	......	10.2	3.76	1.88	954.99	15.50	10.6
	T	213	8.05	456	17.23	17.8	79.8	9.9	6.71	14.36	954.53	977.43	11.2

TABLE III.—*Military posts in each department, alphabetically arranged, with mean strength, admissions for disease and injury, also deaths and discharges, with ratios per thousand of strength for admissions and non-effectiveness, the averages of daily sickness, and meteorological data for 1891.*

DEPARTMENT OF THE EAST.

Names of stations.	Mean strength.	Cases.			Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly non-effective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Temperature.			Total precipitation.
		Disease.	Injury.	Total.							Mean.	Maximum.	Minimum.	
										Feet.	°	°	°	In.
Fort Adams, R. I	242	204	62	266	1,099.17	8.11	33.52	....	2	30	48.8	95	5	30.52
Allegheny Arsenal, Pa	30	27	7	34	1,133.33	.82	27.40	....	....	704	53.1	95	5	39.32
Augusta Arsenal, Ga	22	11	2	13	590.91	.43	19.67	1	....	600	63.8	98	22	46.76
Fort Barrancas, Fla	108	232	52	284	2,629.63	11.16	103.33	1	1	30	67.3	95	29	35.78
Columbia Arsenal, Tenn	12	53	4	47	3,916.66	.93	77.86	....	1	....	....	....	....	....
Columbus Barracks, Ohio	586	1,159	136	1,295	2,209.89	45.20	77.13	14	6	740	52.6	94	5	42.05
Fort Columbus, N. Y	246	179	31	210	853.66	7.49	30.45	....	2	25	53.2	97	10	42.32
Davids Island, N. Y	547	895	136	1,031	1,884.82	28.24	51.62	3	1	30	51.8	96	8	34.92
Frankford Arsenal, Pa	38	43	4	47	1,236.84	1.31	12.58	....	1	50	54.3	97	10	42.52
Fort Hamilton, N. Y	249	478	102	580	2,329.32	13.07	52.50	10	1	47	52.9	93	5	43.65
Jackson Barracks, La	105	153	33	186	1,771.43	7.21	68.70	4	2	10	67.1	97	27	48.44
Kennebec Arsenal, Me	12	11	1	12	1,000.00	.07	5.94	....	....	200	41.7	89	—19	25.92
Fort McHenry, Md	136	172	26	198	1,455.88	8.21	60.31	6	1	36	54.5	93	14	48.48
Fort McPherson, Ga	319	672	92	764	2,394.98	19.50	61.12	16	3	1,078	60.4	95	15	50.82
Madison Barracks, N. Y	316	419	64	483	1,528.48	10.19	32.24	1	2	262	46.0	92	—11	29.12
Fort Monroe, Va	437	519	84	603	1,379.86	14.08	32.23	6	3	8	....	....	....	....
Mount Vernon Barracks, Ala	161	181	27	208	1,291.93	9.11	56.59	1	1	155	65.9	100	21	56.40
Fort Myer, Va	173	137	47	184	1,063.58	6.22	35.98	1	1	200	54.9	96	11	54.96
Newport Barracks, Ky	63	72	9	81	1,285.72	2.06	32.75	1	....	588	53.8	94	5	39.20
Fort Niagara, N. Y	146	79	39	118	808.22	2.59	17.72	2	....	271	....	....	....	....
Fort Ontario, N. Y	57	71	16	87	1,526.31	1.84	32.30	3	....	282	46.6	90	1	31.44
Plattsburg Barracks, N. Y	64	61	19	80	1,250.00	2.41	37.63	....	2	186	44.5	94	—13	26.05
Fort Porter, N. Y	106	98	13	111	1,047.17	3.09	29.18	2	....	660	47.9	90	4	30.74
Fort Preble, Me	66	55	5	60	909.09	1.09	16.52	....	1	38	46.9	95	— 8	36.00
Sandy Hook, N. J	44	48	22	70	1,590.91	.71	16.07	....	1	....	....	....	....	....
Fort Schuyler, N. Y	94	57	18	75	797.87	2.80	29.81	3	1	25	51.5	92	5	39.76
Springfield Armory, Mass	27	11	3	14	518.52	.18	6.59	....	....	250	49.8	95	0	47.01
St. Francis Barracks, Fla	107	281	53	334	3,121.50	5.93	55.43	3	3	15	69.2	97	30	49.19
Fort Thomas, Ky	132	161	24	185	1,401.52	4.33	32.77	6	2	....	....	....	....	....
Fort Trumbull, Conn	65	37	13	50	769.23	1.47	22.55	....	....	25	52.3	97	8	49.21
Fort Wadsworth, N. Y	159	188	55	243	1,528.30	5.05	31.77	5	1	140	54.2	96	10	48.28
Fort Warren, Mass	101	43	28	71	702.97	3.22	31.87	1	....	38	48.8	89	0	43.68
Washington Barracks, D. C	310	481	69	550	1,774.19	14.76	47.61	11	2	106	55.4	95	15	52.95
Watertown Arsenal, Mass	29	13	2	15	517.24	.52	18.04	....	....	100	....	....	....	....
Watervliet Arsenal, N. Y	59	60	10	70	1,186.44	2.84	48.15	1	....	50	....	....	....	....
West Point, N. Y	373	309	57	366	981.23	9.50	25.46	4	2	167	....	....	....	....
Willets Point, N. Y	363	365	95	460	1,267.22	10.40	28.64	5	2	80	52.4	95	9	44.25
Fort Wood, N. J	56	10	1	11	196.43	.04	.73	....	....	....	....	....	....	....
Field	11	7	4	11	1,000.00	.13	11.46	....	1	....	....	....	....	....
Total	6,171	8,042	1,465	9,507	1,540.59	266.32	43.16	111	46	....	....	....	....	....

DEPARTMENT OF DAKOTA.

Names of stations.	Mean strength.	Disease.	Injury.	Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly non-effective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Mean.	Maximum.	Minimum.	Total precipitation.
Fort Abraham Lincoln, N. Dak	63	43	13	56	888.89	1.66	26.35	....	....	1,914	....	....	....	....
Fort Assinniboine, Mont	407	370	83	453	1,113.02	12.33	30.29	7	5	2,720	41.4	92	—34	17.08
Fort Bennett, S. Dak	81	40	10	50	617.28	1.59	19.61	....	....	1,510	....	....	....	....
Fort Buford, N. Dak	164	89	41	130	792.68	4.34	26.48	3	....	1,930	39.6	97	—34	18.98
Fort Custer, Mont	346	549	138	687	1,585.56	20.56	59.43	5	1	3,040	....	....	....	....
Fort Keogh, Mont	338	371	78	449	1,328.40	13.70	40.53	3	1	2,536	43.0	103	—37	14.18
Fort Meade, S. Dak	360	503	167	670	1,861.11	16.93	47.04	8	2	3,624	46.4	100	—33	21.79
Fort Missoula, Mont	186	151	32	183	983.87	3.89	20.90	3	1	3,375	43.2	96	—22	22.43
Fort Pembina, N. Dak	33	12	1	13	393.94	.18	5.40	....	....	900	36.4	93	—29	25.93
Camp Poplar River, Mont	101	71	19	90	891.10	1.90	18.85	....	....	2,030	40.8	99	—36	14.57
Fort Shaw, Mont	78	97	28	125	1,602.56	3.77	48.30	1	2	3,550	....	....	....	....
Fort Snelling, Minn	331	345	47	392	1,184.29	12.84	38.79	8	3	840	43.0	98	—25	22.97
Fort Sully, S. Dak	142	169	36	205	1,443.66	5.82	41.00	1	....	1,678	46.1	109	—24	13.34
Fort Yates, N. Dak	230	220	59	279	1,213.04	12.20	53.03	3	4	1,670	43.5	103	—30	18.49
Fort Yellowstone, Wyo	59	40	21	61	1,033.90	2.08	35.20	1	1	....	39.2	89	—24	23.34
Field	274	180	65	245	894.16	3.59	13.09	1	2	....	....	....	....	....
Total	3,193	3,250	838	4,088	1,280.30	117.38	36.76	44	22	....	....	....	....	....

TABLE III.—*Military posts in each department, alphabetically arranged, with mean strength, admissions for disease and injury, etc.*—Continued.

DEPARTMENT OF THE PLATTE.

Names of stations.	Mean strength.	Cases.			Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly non-effective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Temperature.			Total precipitation.
		Disease.	Injury.	Total.							Mean.	Maximum.	Minimum.	
										Feet.	°	°	°	In.
Fort D. A. Russell, Wyo.	377	241	87	328	870.02	9.64	25.57	4	....	6,021	44.1	89	— 7	18.97
Fort Douglas, Utah	416	364	61	425	1,021.64	14.42	34.67	4	7	4,904	50.8	98	2	15.26
Fort Du Chesne, Utah	207	277	70	347	1,676.33	6.59	31.86	2	....	....	....	....	....	....
Fort Lewis, Colo	43	19	6	25	581.39	1.05	24.47	....	....	8,500	....	....	....	....
Fort Logan, Colo	287	419	37	456	1,588.85	22.09	76.98	3	17	....	....	....	....	....
Fort McKinney, Wyo	277	270	84	354	1,277.98	10.93	39.46	1	6	5,175	44.2	89	—25	14.19
Fort Niobrara, Nebr	396	551	141	692	1,747.47	17.11	43.21	4	3	2,750	44.0	101	—38	23.70
Fort Omaha, Nebr	418	429	87	516	1,234.45	17.03	40.74	9	2	960	49.7	97	— 9	34.92
Camp Pilot Butte, Wyo.	55	51	9	60	1,090.91	1.30	23.66	1	1	....	41.6	96	—20	13.23
Fort Randall, S. Dak	82	66	16	82	1,000.00	2.60	31.67	1	1	1,245	46.8	95	—20	22.95
Fort Robinson, Nebr	404	700	158	858	2,123.76	17.44	43.16	5	4	3,675	....	....	....	....
Fort Sidney, Nebr	191	190	45	235	1,230.37	7.96	41.70	2	3	4,326	....	....	....	....
Fort Washakie, Wyo	152	98	33	131	861.84	3.56	23.41	1	1	5,462	....	90	—29	18.86
Field	385	424	97	521	1,353.25	8.90	23.12	....	5	....	....	....	....	....
Total	3,690	4,099	931	5,030	1,363.14	140.63	38.11	37	50	....	....	....	....	....

DEPARTMENT OF THE MISSOURI.

Names of stations.	Mean strength.	Disease.	Injury.	Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly non-effective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Mean.	Maximum.	Minimum.	Total precipitation.
Fort Brady	116	77	16	93	801.72	1.96	16.89	....	....	600	40.5	50	—31	24.19
Chicago, Headquarters Department of the Missouri	52	10	....	10	192.31	.02	11.85	1	....	661	48.5	96	— 8	26.54
Camp Guthrie, Okla	20	20	7	27	1,350.00	.84	42.05	1	....	....	61.5	100	10	32.27
Indianapolis Arsenal, Ind	25	38	4	42	1,680.00	.75	30.03	....	....	698	53.5	94	— 3	38.23
Jefferson Barracks, Mo	438	405	63	468	1,068.49	15.16	34.62	7	3	475	56.2	96	4	30.53
Fort Leavenworth, Kans	704	590	155	745	1,058.24	25.56	36.32	8	3	844	53.1	96	— 2	37.71
Prison Guard, Leavenworth, Kans	109	84	5	89	816.51	2.78	25.54	5	....	844	53.1	96	— 2	37.71
Fort Mackinac, Mich	110	119	19	138	1,254.55	3.24	29.44	2	1	728	40.7	83	—11	28.90
Camp Oklahoma, Okla	51	69	16	85	1,666.67	2.48	48.56	....	1	....	....	....	....	....
Fort Reno, Okla	302	571	97	668	2,211.92	17.97	59.47	4	5	3,200	58.8	100	10	26.77
Fort Riley, Kans	600	650	195	845	1,408.33	34.91	58.18	17	9	1,300	52.4	98	— 2	25.93
Rock Island Arsenal, Ill	64	60	10	70	1,093.75	.99	15.50	....	1	528	49.4	94	—10	31.45
St. Louis, Headquarters Department of the Missouri	14	4	....	4	285.71	.10	7.44	....	....	....	56.2	96	4	30.53
Fort Sheridan, Ill	308	311	85	396	1,285.72	10.99	35.67	5	5	....	....	....	....	....
Fort Sill, Okla	304	499	93	592	1,947.37	13.88	45.67	4	2	1,200	60.0	101	12	32.76
Fort Supply, Ind. T	218	220	40	260	1,192.66	6.84	31.39	3	....	2,300	56.2	98	3	30.43
Fort Wayne, Mich	241	230	57	287	1,190.87	10.73	44.52	6	1	580	48.9	100	1	28.16
Field	52	41	10	51	980.77	.59	11.27	....	....	....	....	....	....	....
Total	3,725	3,998	872	4,870	1,306.33	150.39	40.34	63	31	....	....	....	....	....

DEPARTMENT OF ARIZONA.

Names of stations.	Mean strength.	Disease.	Injury.	Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly non-effective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Mean.	Maximum.	Minimum.	Total precipitation.
Fort Apache, Ariz	218	430	85	515	2,362.38	13.58	62.27	4	2	5,050	52.9	97	—14	13.36
Fort Bayard, N. Mex	318	343	63	406	1,276.73	16.08	50.56	8	2	6,040	53.7	98	— 3	10.30
Fort Bowie, Ariz	124	99	46	145	1,169.36	4.43	35.73	....	....	4,826	62.4	103	15	8.05
Fort Grant, Ariz	289	255	80	335	1,159.17	10.09	34.91	5	3	856	60.8	100	15	12.21
Fort Huachuca, Ariz	206	93	31	124	601.94	3.99	19.39	2	2	5,173	56.8	100	7	10.84
Fort Lowell, Ariz	13	1	5	6	461.54	.26	20.23	....	....	2,530	70.9	109	22	6.61
Fort Marcy, N. Mex	16	23	1	24	1,500.00	.62	38.87	....	1	6,846	47.3	87	— 6	16.79
San Carlos, Ariz	221	235	55	290	1,312.22	10.03	45.37	3	1	2,156	64.8	117	11	11.00
San Diego Barracks, Cal	65	70	12	82	1,261.54	5.86	90.15	5	....	150	61.2	89	32	8.99
Fort Stanton, N. Mex	131	151	36	187	1,427.48	4.41	33.63	....	2	7,500	50.3	92	— 6	14.68
Fort Thomas, Ariz	58	87	18	105	1,810.34	1.95	33.59	....	2	2,710	....	....	....	....
Fort Union, N. Mex	19	3	2	5	263.15	.22	11.68	....	....	6,700	....	....	....	....
Whipple Barracks, Ariz	242	250	49	299	1,235.54	11.92	49.25	13	....	5,340	52.0	98	— 2	14.66
Fort Wingate, N. Mex	340	493	111	604	1,776.47	14.51	42.68	4	....	6,649	49.0	96	— 7	14.27
Field	22	9	5	14	636.37	.24	10.83	....	....	....	....	....	....	....
Total	2,282	2,542	599	3,141	1,376.42	98.18	43.03	44	15	....	....			

TABLE III.—*Military posts in each department, alphabetically arranged, with mean strength, admissions for disease and injury, etc.*—Continued.

DEPARTMENT OF TEXAS.

Names of stations.	Mean strength.	Cases.			Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly non-effective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Temperature.			Total precipitation.
		Disease.	Injury.	Total.							Mean.	Maximum.	Minimum.	
										Feet.	°	°	°	*In.*
Fort Bliss, Tex	110	115	9	124	1,127.27	3.24	29.44	....	1	3,600	62.9	107	9	3.34
Fort Brown, Tex	62	39	10	49	790.32	2.37	38.18	....	....	50	....	....	....	.....
Fort Clark, Tex	335	354	67	421	1,256.72	13.27	39.61	7	5	1,000	....	....	....	.....
Fort Davis, Tex	122	117	36	153	1,254.10	6.13	50.28	5	2	4,928	....	....	....	.....
Camp Del Rio, Tex	4	1	.....	1	250.00	.02	6.16	....	....	820	....	....	....	.....
Camp at Eagle Pass, Tex	52	74	19	93	1,788.46	2.56	49.21	1	2	800	69.3	111	18	16.97
Fort Hancock, Tex	49	52	23	75	1,530,61	2.43	49.65	....	1	3,000	59.6	109	−6	3.33
Fort McIntosh, Tex	153	161	32	193	1,261.44	8.41	54.97	2	2	380	71.2	106	27	20.51
Camp Pena Colorado, Tex	46	62	16	78	1,695.65	1.35	29.42	....	...	3,800	59.7	104	1	12.37
Fort Ringgold, Tex	112	111	42	153	1,366.07	5.83	52.05	2	1	521	73.5	105	25	17.03
Fort Sam Houston, Tex	499	795	196	991	1,985.97	28.24	56.59	15	3	781	68.1	104	25	30.04
San Antonio, Headquarters Department of Texas	33	12	....	12	363.64	.50	15.11	....	....	781	68.1	104	25	30.04
Field	67	40	23	63	940.30	.73	10.92	....	1	.....	....	....	....	.....
Total	1,644	1,933	473	2,406	1,463.50	75.09	45.68	32	18	.....	....	....	....	.....

DEPARTMENT OF CALIFORNIA.

Names of stations.	Mean strength.	Disease.	Injury.	Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly non-effective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Mean.	Maximum.	Minimum.	Total precipitation.
Alcatraz Island, Cal	113	97	27	124	1,097.35	5.44	48.15	2	2	136	54.3	95	35	25.01
Angel Island, Cal	203	228	38	266	1,310.34	10.16	50.04	9	2	.....	58.5	91	32	22.96
Benicia Arsenal, Cal	51	36	8	44	862.74	1.02	19.99	....	....	64	....	....	....	.....
Benicia Barracks, Cal	90	63	21	84	933.33	2.17	24.14	3	....	64	....	....	....	.....
Fort Bidwell, Cal	26	16	6	22	846.15	.59	22.76	....	....	4,680	....	....	....	.....
Fort Gaston, Cal	55	27	11	38	690.90	1.04	18.83	....	....	397	54.9	109	25	64.33
Fort Mason, Cal	62	38	14	52	838.71	1.88	30.27	2	....	113	57.4	94	34	22.79
Presidio of San Francisco, Cal	448	476	162	638	1,424.11	24.58	54.88	5	3	60	56.6	100	37	21.11
Field	60	60	14	74	1,233.33	2.22	37.08	....	1	.....	....	....	....	.....
Total	1,108	1,041	301	1,342	1,211.13	49.10	44.32	21	8	.....	....	....	....	.....

DEPARTMENT OF THE COLUMBIA.

Names of stations.	Mean strength.	Disease.	Injury.	Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly non-effective per 1,000 of mean strength.	Discharge for disability.	Deaths.	Altitude of stations.	Mean.	Maximum.	Minimum.	Total precipitation.
Boise Barracks, Idaho	111	77	26	103	927.93	3.83	34.48	3	1	2,830	49.5	109	0	13.31
Fort Canby, Wash	100	137	36	173	1,730.00	4.72	47.15	3	....	179	51.0	87	30	72.01
Fort Sherman, Idaho	281	194	53	247	879.00	7.16	25.50	5	5	2,198	48.3	98	−12	26.09
Fort Spokane, Wash	155	74	34	108	696.77	3.87	24.99	3	....	1,600	49.0	104	− 9	12.34
Fort Townsend, Wash	64	37	11	48	750.00	1.40	21.92	....	1	135	49.0	89	20	24.90
Vancouver Barracks, Wash	429	288	73	361	841.49	14.38	33.51	12	4	50	52.9	103	19	44.40
Fort Walla Walla, Wash	244	228	64	292	1,196.72	12.77	52.32	5	1	1,018	54.2	108	2	16.11
Field	28	9	16	25	892.86	.39	13.89	....	....	.....	....	....	....	.....
Total	1,412	1,044	313	1,357	961.05	48.52	34.36	31	12	.....	....	....	....	.....

TABLE IV.—*A general view of the results of disease and injury at each of the various military stations, arranged in the order of their mean strength.*

GROUP 1.—Thirteen stations, garrisoned by 400 to 700 men each. Average, 487.

Military stations.	Mean strength.	Admissions.		Constantly non-effective.		Deaths.		Discharges.	
		No.	Ratio per 1,000.	No.	Ratio per 1,000.	No.	Ratio per 1,000.	No.	Ratio per 1,000.
Fort Leavenworth, Kans	704	745	1,058.24	25.56	36.32	3	4.26	8	11.36
Fort Riley, Kans	600	845	1,408.33	34.91	58.18	9	15.00	17	28.33
Columbus Barracks, Ohio	586	1,295	2,209.89	45.20	77.13	6	10.24	14	23.89
Davids Island, N. Y	547	1,031	1,884.82	28.24	51.62	1	1.83	3	5.48
Fort Sam Houston, Tex	499	991	1,985.97	28.24	56.59	3	6.01	15	30.06
Presidio, San Francisco, Cal	448	638	1,424.11	24.58	54.88	3	6.70	5	11.16
Jefferson Barracks, Mo	438	468	1,068.49	15.16	34.62	3	6.85	7	15.98
Fort Monroe, Va	437	603	1,379.86	14.08	32.23	3	6.87	6	13.73
Vancouver Barracks, Wash	429	361	841.49	14.38	33.51	4	9.32	12	27.97
Fort Omaha, Nebr	418	516	1,234.45	17.03	40.74	2	4.78	9	21.53
Fort Douglas, Utah	416	425	1,021.64	14.42	34.67	7	16.83	4	9.62
Fort Assinniboine, Mont	407	453	1,113.02	12.33	30.29	5	12.29	7	17.20
Fort Robinson, Nebr	404	858	2,123.76	17.44	43.16	4	9.90	5	12.38
Summary	6,333	9,229	1,457.29	291.58	46.04	53	8.37	112	17.69

GROUP 2.—Seventeen stations, garrisoned by 300 to 400 men each. Average, 337.

Fort Niobrara, Nebr	396	692	1,747.47	17.11	43.21	3	7.58	4	10.10
Fort D. A. Russell, Wyo	377	328	870.02	9.64	25.57	.....	....	4	10.61
West Point, N. Y	373	366	981.23	9.50	25.46	2	5.36	4	10.72
Willets Point, N. Y	363	460	1,267.22	10.40	28.64	2	5.51	5	13.77
Fort Meade, S. Dak	360	670	1,861.11	16.98	47.04	2	5.56	8	22.22
Fort Custer, Mont	346	687	1,985.56	20.56	59.43	1	2.89	5	14.45
Fort Wingate, N. Mex	340	604	1,776.47	14.51	42.68	.....	....	4	11.76
Fort Keogh, Mont	338	449	1,328.40	13.70	40.53	1	2.96	3	8.87
Fort Clark, Tex	335	421	1,256.72	13.27	39.61	5	14.93	7	20.90
Fort Snelling, Minn	331	392	1,184.29	12.84	38.79	3	9.06	8	24.17
Fort McPherson, Ga	319	764	2,394.98	19.50	61.12	3	9.40	16	50.16
Fort Bayard, N. Mex	318	406	1,276.73	16.08	50.56	2	6.29	8	25.16
Madison Barracks, N. Y	316	483	1,528.48	10.19	32.24	2	6.33	1	3.16
Washington Barracks, D. C	310	550	1,774.19	14.76	47.61	2	6.45	11	35.49
Fort Sheridan, Ill	308	396	1,285.72	10.99	35.67	5	16.23	5	16.23
Fort Sill, Okla	304	592	1,947.37	13.88	45.67	2	6.58	4	13.16
Fort Reno, Okla	302	668	2,211.92	17.97	59.47	5	16.56	4	13.24
Summary	5,736	8,928	1,556.49	241.82	42.16	40	6.97	101	19.18

TABLE IV.—*A general view of the results of disease and injury at each of the various military stations, etc.*—Continued.

GROUP 3.—Seventeen stations garrisoned by 200 to 300 men each. Average, 241.

Military stations.	Mean strength.	Admissions.		Constantly non-effective.		Deaths.		Discharges.	
		No.	Ratio per 1,000.	No.	Ratio per 1,000.	No.	Ratio per 1,000.	No.	Ratio per 1,000.
Fort Grant, Ariz	289	335	1,159.17	10.09	34.91	3	10.38	5	17.30
Fort Logan, Colo	287	456	1,588.85	22.09	76.98	17	59.23	3	10.45
Fort Sherman, Idaho	281	247	879.00	7.16	25.50	5	17.79	5	17.79
Fort McKinney, Wyo	277	354	1,277.98	10.93	39.46	6	21.66	1	3.61
Fort Hamilton, N. Y	249	580	2,329.32	13.07	52.50	1	4.02	10	40.16
Fort Columbus, N. Y	246	210	853.66	7.49	30.45	2	8.13	.....	.....
Fort Walla Walla, Wash	244	292	1,196.72	12.77	52.32	1	4.10	5	20.49
Fort Adams, R. I	242	266	1,099.17	8.11	33.52	2	8.26	.....	.....
Whipple Barracks, Ariz	242	299	1,235.54	11.92	49.25	.....	.....	13	53.72
Fort Wayne, Mich	241	287	1,190.87	10.73	44.52	1	4.15	6	24.90
Fort Yates, N. Dak	230	279	1,213.04	12.20	53.03	4	17.39	3	13.04
San Carlos, Ariz	221	290	1,312.22	10.03	45.37	1	4.52	3	13.57
Fort Apache, Ariz	218	515	2,362.38	13.58	62.27	2	9.17	4	18.35
Fort Supply, Ind. T	218	260	1,192.66	6.84	31.39	.....	.....	3	13.76
Fort Du Chesne, Utah	207	347	1,676.33	6.59	31.86	.....	.....	2	9.66
Fort Huachuca, Ariz	206	124	601.94	3.99	19.39	2	9.71	2	9.71
Angel Island, Cal	203	266	1,310.34	10.16	50.04	2	9.85	9	44.33
Summary	4,101	5,407	1,318.46	177.76	43.34	49	11.95	74	18.04

GROUP 4.—Thirty stations garrisoned by 100 to 200 men each. Average, 131.

Military stations.	Mean strength.	Admissions No.	Admissions Ratio per 1,000.	Constantly non-effective No.	Constantly non-effective Ratio per 1,000.	Deaths No.	Deaths Ratio per 1,000.	Discharges No.	Discharges Ratio per 1,000.
Fort Sidney, Nebr	191	235	1,230.37	7.96	41.70	3	15.71	2	10.47
Fort Missoula, Mont	186	183	983.87	3.89	20.90	1	5.38	3	16.13
Fort Myer, Va	173	184	1,063.58	6.22	35.98	1	5.78	1	5.78
Fort Buford, N. Dak	164	130	792.68	4.34	26.48	.....	.....	3	18.29
Mount Vernon Barracks, Ala	161	208	1,291.93	9.11	56.59	1	6.21	1	6.21
Fort Wadsworth, N. Y	159	243	1,528.30	5.05	31.77	1	6.29	5	31.45
Fort Spokane, Wash	155	108	696.77	3.87	24.99	.....	.....	3	19.35
Fort McIntosh, Tex	153	193	1,261.44	8.41	54.97	2	13.07	2	13.07
Fort Washakie, Wyo	152	131	861.84	3.56	23.41	1	6.58	1	6.58
Fort Niagara, N. Y	146	118	808.22	2.59	17.72	.....	.....	2	13.70
Fort Sully, S. Dak	142	205	1,443.66	5.82	41.00	.....	.....	1	7.04
Fort McHenry, Md	136	198	1,455.88	8.21	60.34	1	7.35	6	44.12
Fort Thomas, Ky	132	185	1,401.52	4.33	32.77	2	15.15	6	45.45
Fort Stanton, N. Mex	131	187	1,427.48	4.41	33.63	2	15.27	.....	.....
Fort Bowie, Ariz	124	145	1,169.36	4.43	35.73	.....	.....	.....	.....
Fort Davis, Tex	122	153	1,254.10	6.13	50.28	2	16.39	5	40.98
Fort Brady, Mich	116	93	801.72	1.96	16.89	.....	.....	.....	.....
Alcatraz Island, Cal	113	124	1,097.35	5.44	48.15	2	17.70	2	17.70
Fort Ringgold, Tex	112	153	1,366.07	5.83	52.05	1	8.93	2	17.86
Boise Barracks, Idaho	111	103	927.93	3.83	34.48	1	9.01	3	27.03
Fort Bliss, Tex	110	124	1,127.27	3.24	29.44	1	9.09	.....	.....
Fort Mackinac, Mich	110	138	1,254.55	3.24	29.44	1	9.09	2	18.18
Leavenworth Prison, Kans	109	89	816.51	2.78	25.54	.....	.....	5	45.87
Fort Barrancas, Fla	108	284	2,629.63	11.16	103.33	1	9.26	1	9.26
St. Francis Barracks, Fla	107	334	3,121.50	5.93	55.43	3	28.04	3	28.04
Fort Porter, N. Y	106	111	1,047.17	3.09	29.18	.....	.....	2	18.87
Jackson Barracks, La	105	186	1,771.43	7.21	68.70	2	19.05	4	38.09
Camp Poplar River, Mont	101	90	891.10	1.90	18.85	.....	.....	.....	.....
Fort Warren, Mass*	101	71	702.97	3.22	31.87	.....	.....	1	9.90
Fort Canby, Wash	100	173	1,730.00	4.72	47.15	.....	.....	3	30.00
Summary	3,936	4,879	1,239.58	151.89	38.59	29	7.37	69	17.53

TABLE IV.—*A general view of the results of disease and injury at each of the various military stations, etc.*—Continued.

GROUP 5.—Forty-seven stations garrisoned by 1 to 100 men each. Average, 47.

Military stations.	Mean strength.	Admissions.		Constantly non-effective.		Deaths.		Discharges.	
		No.	Ratio per 1,000.	No.	Ratio per 1,000.	No.	Ratio per 1,000.	No.	Ratio per 1,000.
Fort Schuyler, N. Y	94	75	797.87	2.80	29.81	1	10.64	3	31.91
Benicia Barracks, Cal	90	84	933.33	2.17	24.14			3	33.33
Fort Randall, S. Dak	82	82	1,000.00	2.60	31.67	1	12.20	1	12.20
Fort Bennett, N. Dak	81	50	617.28	1.59	19.61				
Fort Shaw, Mont	78	125	1,602.56	3.77	48.30	2	25.64	1	12.82
Fort Preble, Me	66	60	909.09	1.09	16.52	1	15.15		
San Diego Barracks, Cal	65	82	1,261.54	5.86	90.15			5	76.92
Fort Trumbull, Conn	65	50	769.23	1.47	22.55				
Plattsburg Barracks, N. Y	64	80	1,250.00	2.41	37.63	2	31.25		
Rock Island Arsenal, Ill	64	70	1,093.75	.99	15.50	1	15.62		
Fort Townsend, Wash	64	48	750.00	1.40	21.92	1	15.62		
Fort Abraham Lincoln, N. Dak	63	56	888.89	1.66	26.35				
Newport Barracks, Ky	63	81	1,285.72	2.06	32.75			1	15.87
Fort Brown, Tex	62	49	790.32	2.37	38.18				
Fort Mason, Cal	62	52	838.71	1.88	30.27			2	32.26
Watervliet Arsenal, N. Y	59	70	1,186.44	2.84	48.15			1	16.95
Fort Yellowstone, Wyo	59	61	1,033.90	2.08	35.20	1	16.95	1	16.95
Fort Thomas, Ariz	58	105	1,810.34	1.95	33.59	2	34.48		
Fort Ontario, N. Y	57	87	1,526.31	1.84	32.30			3	52.63
Fort Wood, N. J	56	11	196.43	.04	.73				
Fort Gaston, Cal	55	38	690.90	1.04	18.83				
Camp Pilot Butte, Wyo	55	60	1,090.91	1.30	23.66	1	18.18	1	18.18
Chicago, Ill	52	10	192.31	.62	11.85			1	19.23
Camp at Eagle Pass, Tex	52	93	1,788.46	2.56	49.21	2	38.46	1	19.23
Benicia Arsenal, Cal	51	44	862.74	1.02	19.99				
Camp Oklahoma, Okla	51	85	1,666.67	2.48	48.56	1	19.61		
Fort Hancock, Tex	49	75	1,530.61	2.43	49.65	1	20.41		
Camp Pena Colorado, Tex	46	78	1,695.65	1.35	29.42				
Sandy Hook, N. J	44	70	1,590.91	.71	16.07	1	22.73		
Fort Lewis, Colo	43	25	581.39	1.05	24.47				
Frankford Arsenal, Pa	38	47	1,236.84	1.31	12.58	1	26.32		
Fort Pembina, N. Dak	33	13	393.94	.18	5.40				
San Antonio, Tex	33	12	363.64	.50	15.11				
Allegheny Arsenal, Pa	30	34	1,133.33	.82	27.40				
Watertown Arsenal, Mass	29	15	517.24	.52	18.04				
Springfield Armory, Mass	27	14	518.52	.18	6.59				
Fort Bidwell, Cal	26	22	846.15	.59	22.76				
Indianapolis Arsenal, Ind	25	42	1,680.00	.75	30.03				
Augusta, Ga	22	13	590.91	.43	19.67			1	45.45
Camp at Guthrie, Okla	20	27	1,350.00	.84	42.05			1	50.00
Fort Union, N. Mex	19	5	263.15	.22	11.68				
Fort Marcy, N. Mex	16	24	1,500.00	.62	38.87	1	62.50		
St. Louis, Mo	14	4	285.71	.10	7.44				
Fort Lowell, Ariz	13	6	461.54	.26	20.23				
Columbia Arsenal, Tenn	12	47	3,916.66	.93	77.86	1	83.33		
Kennebec Arsenal, Me	12	12	1,000.00	.07	5.94				
Camp Del Rio, Tex	4	1	250.00	.02	6.16				
Summary	2,223	2,294	1,031.94	65.78	29.59	21	9.45	26	11.70

GROUP 6.—Field.

Department of the Platte	385	521	1,353.25	8.90	23.12	5	12.99		
Department of Dakota	274	245	894.16	3.59	13.09	2	7.30	1	3.65
Department of Texas	67	63	940.30	.73	10.92	1	14.92		
Department of California	60	74	1,233.33	2.22	37.08	1	16.67		
Department of the Missouri	52	51	980.77	.59	11.27				
Department of the Columbia	28	25	892.86	.39	13.89				
Department of Arizona	22	14	636.37	.24	10.83				
Department of the East	11	11	1,000.00	.13	11.46	1	90.91		
Summary	899	1,004	1,116.80	16.78	18.12	10	11.12	1	1.11
Hot Springs, Ark	41	16	390.24	31.82	776.21	1	24.39	29	707.32
At large						10		44	
Total for the Army	23,269	31,757	1,364.78	977.43	42.01	213		456	

TABLE IV.—*A general view of the results of diseases and injury at each of the various military stations, etc.*—Continued.

SUMMARY OF THE SIX GROUPS.

Range of the several means in each group.	Number of posts in each group and average strength of each.		Mean strength.	Ratios per 1,000 of mean strength.				Daily average sick.	
	No.	Average strength.		Admissions.	Constantly non-effective.	Deaths.	Discharges.	All posts.	Average for each post.
Group 1, 400 to 700 men...	13	487	6,333	1,457.29	46.04	8.37	17.69	291.58	22.43
Group 2, 300 to 400 men...	17	337	5,736	1,556.49	42.16	6.97	19.18	241.82	14.22
Group 3, 200 to 300 men...	17	241	4,101	1,318.46	43.34	11.95	18.04	177.66	10.45
Group 4, 100 to 200 men...	30	131	3,936	1,239.58	38.59	7.37	17.53	151.89	5.06
Group 5, 1 to 100 men....	47	47	2,223	1,031.94	29.59	9.45	11.70	65.78	1.40
Group 6, field...........	......	....	899	1,116.80	18.12	11.12	1.11	16.78	....

TABLE V.—*Twenty posts having the highest admission rates for the year 1891; also their admission rates for the years 1886 to 1890, inclusive.*

Names of stations.	Mean strength.	Ratios per 1,000 of mean strength.				Admission rates per 1,000 of mean strength.				
		Admissions.	Deaths.	Discharges for disability.	Constantly non-effective.	1890.	1889.	1888.	1887.	1886.
St. Francis Barracks, Fla.	107	3,121.50	28.04	28.04	55.43	2,015.38	1,568.97	1,378.79	1,718.75	1,942
Fort Barrancas, Fla......	108	2,629.63	9.26	9.26	103.33	1,674.42	1,360.66	1,109.09	1,037.04	1,407
Fort McPherson, Ga.....	319	2,394.98	9.40	50.16	61.12	2,489.36	3,416.67	....	....	....
Fort Apache, Ariz.......	218	2,362.38	9.17	18.35	62.27	2,371.90	1,029.41	933.67	968.42	1,934
Fort Hamilton, N. Y.....	249	2,329.32	4.02	40.16	52.50	1,626.26	1,552.63	1,107.14	1,102.86	9[illegible]6
Fort Reno, Okla.........	302	2,211.92	16.56	13.24	59.47	1,922.30	1,474.51	1,378.55	1,607.97	1,543
Columbus Barracks, Ohio	586	2,209.89	10.24	23.89	77.13	1,876.49	2,318.86	2,075.66	1,942.36	1,550
Fort Robinson, Nebr	404	2,123.76	9.90	12.38	43.16	1,895.67	1,454.33	925.56	1,283.08	1,593
Fort Sam Houston, Tex.	499	1,985.97	6.01	30.06	56.59	2,430.69	1,262.61	943.60	1,570.67	1,192
Fort Custer, Mont.......	346	1,985.56	2.89	14.45	59.43	1,380.66	1,266.86	1,245.33	931.13	1,13[illegible]
Fort Sill, Okla..........	304	1,947.37	6.58	13.16	45.67	2,551.52	1,797.10	1,592.06	1,744.68	1,64[illegible]
Davids Island, N. Y.....	547	1,884.82	1.83	5.48	51.62	1,642.8[illegible]	1,259.07	1,533.12	1,437.28	1,7[illegible]
Fort Meade, S. Dak......	360	1,861.11	5.56	22.22	47.04	853.90	1,312.14	1,121.72	1,935.06	1,544
Fort Thomas, Ariz	58	1,810.34	34.48	....	33.59	1,481.13	1,079.21	1,632.08	1,733.77	1,184
Camp at Eagle Pass, Tex.	52	1,788.46	38.46	19.23	49.21	2,053.57	1,145.45	788.46	821.43	1,14[illegible]
Fort Wingate, N. Mex...	340	1,776.47	......	11.76	42.68	1,788.30	1,036.46	955.41	1,424.62	1,52[illegible]
Washington Barracks, D. C....................	310	1,774.19	6.45	35.49	47.61	1,329.41	1,139.44	1,723.48	1,767.79	1,821
Jackson Barracks, La....	105	1,771.43	19.05	38.09	68.70	2,163.04	1,875.00	910.45	884.61	937
Fort Niobrara, Nebr.....	396	1,747.47	7.58	10.10	43.21	1,468.25	1,354.33	1,409.92	824.78	1,077
Fort Canby, Wash.......	100	1,730.00	......	30.00	47.15	1,126.98	1,607.14	....	969.70	671
U. S. Army........	23,269	1,364.78	8.05	17.23	42.01	1,384.25	1,315.02	1,270.73	1,246.88	1,263

TABLE VI.—*Twenty posts having the highest non-effective rates for the year 1891; also their non-effective rates for the years 1886 to 1890, inclusive.*

Names of stations.	Mean strength.	Constantly non-effective per 1,000 mean strength.	Average sick daily.	Average of days each case was treated.	Constantly non-effective per 1,000 of mean strength.				
					1890.	1889.	1888.	1887.	1886.
Fort Barrancas, Fla	108	103.33	11.16	14.34	58.49	48.42	33.98	34.06	38
San Diego Barracks, Cal	65	90.15	5.86	26.09	122.48	77.07	53.87	54.31	96
Columbus Barracks, Ohio	586	77.13	45.20	12.72	77.55	92.74	81.87	74.51	63
Fort Logan, Colo	287	76.98	22.09	17.68	58.49	70.78	76.95	26.03	......
Jackson Barracks, La	105	68.70	7.21	14.16	70.64	35.75	17.78	19.07	28
Fort Apache, Ariz	218	62.27	13.58	9.62	55.51	36.53	27.00	40.14	41
Fort McPherson, Ga	319	61.12	19.50	9.32	61.16	72.80	......	......	......
Fort McHenry, Md	136	60.34	8.21	15.13	63.73	53.71	62.99	59.67	30
Fort Reno, Okla	302	59.47	17.97	9.82	56.53	61.55	46.85	46.81	37
Fort Custer, Mont	346	59.43	20.56	10.93	57.91	49.72	49.58	47.81	46
Fort Riley, Kans	600	58.18	34.91	15.08	36.45	39.28	51.36	44.07	42
Fort Sam Houston, Tex	499	56.59	28.24	10.40	63.25	50.64	38.41	51.59	39
Mount Vernon Barracks, Ala	161	56.59	9.11	15.99	68.57	54.86	37.82	36.71	41
St. Francis Barracks, Fla	107	55.43	5.93	6.48	66.76	32.40	34.57	40.95	44
Fort McIntosh, Tex	153	54.97	8.41	15.91	25.31	53.75	62.23	58.38	41
Presidio of San Francisco, Cal	448	54.88	24.58	14.06	45.96	60.60	54.43	32.64	34
Fort Yates, N. Dak	230	53.03	12.20	15.96	51.14	42.43	41.05	37.81	30
Fort Hamilton, N. Y	249	52.50	13.07	8.23	41.91	41.40	29.11	32.31	18
Fort Walla Walla, Wash	244	52.32	12.77	15.96	47.71	42.78	45.90	28.98	32
Fort Ringgold, Tex	112	52.05	5.83	13.91	26.61	23.34	35.44	50.38	50
U. S. Army	23,269	42.01	977.43	11.23	42.71	44.12	41.91	42.38	39

TABLE VII.—*Twenty posts having the highest admission rates for disease, excluding venereal diseases, vaccina, and alcoholism, together with their ratios for deaths, discharges, and constant non-effectiveness; also, the corresponding average rates of the Army, year 1891.*

Names of stations.	Mean strength.	Ratios per 1,000 of mean strength.			
		Admissions.	Deaths.	Discharges.	Constantly non-effective.
St. Francis Barracks, Fla	107	2,242.98	18.69	28.04	32.75
Fort Barrancas, Fla	108	1,851.85	....	9.26	74.71
Fort Hamilton, N. Y	249	1,799.20	....	32.13	34.43
Fort Apache, Ariz	218	1,766.08	4.59	13.76	40.96
Fort McPherson, Ga	319	1,764.89	6.27	25.09	35.23
Fort Reno, Okla	302	1,745.03	13.24	6.62	41.90
Fort Sill, Okla	304	1,578.95	3.29	9.87	34.83
Fort Robinson, Nebr	404	1,561.88	2.48	7.43	26.97
Fort Custer, Mont	346	1,468.22	2.89	14.45	41.42
Fort Thomas, Ariz	58	1,448.28	17.24	....	26.46
Fort Logan, Colo	287	1,383.28	48.78	10.45	66.94
Fort Sam Houston, Tex	499	1,368.74	6.01	26.06	37.95
Washington Barracks, D. C	310	1,361.30	3.23	32.26	30.37
Fort Meade, S. Dak	360	1,313.90	5.56	8.33	29.82
Columbus Barracks, Ohio	586	1,312.30	8.53	8.53	39.96
Fort Wingate, N. Mex	340	1,294.13	....	5.88	28.46
Fort Du Chesne, Utah	207	1,251.21	....	9.66	23.40
Camp at Eagle Pass, Tex	52	1,192.29	19 23	....	17.60
Fort Canby, Wash	100	1,170.00	....	30.00	31.52
Madison Barracks, N. Y	316	1,132.91	6.33	3.16	23.09
U. S. Army	23,269	854.53	4.74	12.66	25.99

TABLE VIII.—*Twenty posts having the highest non-effective rates for disease, excluding venereal diseases, vaccina, and alcoholism, together with the average number sick daily, and average duration of each case; also the corresponding average rates of the Army, year 1891.*

Names of stations.	Mean strength.	Ratio per 1,000 constantly non-effective.	Average number of sick daily.	Average number of days each case was treated.
Fort Barrancas, Fla	108	74.71	8.1	14.72
San Diego Barracks, Cal	65	71.99	4.7	32.85
Fort Logan, Colo	287	66.94	19.2	17.66
Fort Reno, Okla	302	41.90	12.7	8.77
Fort Custer, Mont	346	41.42	14.3	10.30
Fort Apache, Ariz	218	40.96	8.9	8.47
Watervliet Arsenal, N. Y	59	40.63	2.4	14.58
Columbus Barracks, Ohio	586	39.96	23.4	11.11
Jackson Barracks, La	105	38.86	4.1	14.05
Fort Sam Houston, Tex	499	37.95	18.9	10.12
Fort Yates, N. Dak	230	36.26	8.3	17.10
Fort McPherson, Ga	319	35.23	11.2	7.29
Fort Sill, Okla	304	34.83	10.6	8.05
Fort Bayard, N. Mex	318	34.59	11.0	13.03
Fort Hamilton, N. Y	249	34.43	8.6	6.98
Fort McHenry, Md	136	32.81	4.5	12.06
St. Francis Barracks, Fla	107	32.75	3.5	5.33
Fort McIntosh, Tex	153	32.73	5.0	15.49
Mount Vernon Barracks, Ala	161	32.54	5.2	13.66
Angel Island, Cal	203	32.02	6.5	12.23
U. S. Army	23,269	25.99	604.9	11.10

TABLE IX.—*The military posts in each department, showing the rates of admission, death, discharge, and constant non-effectiveness for disease, not including venereal diseases, vaccina, nor alcoholism, year 1891.*

DEPARTMENT OF THE EAST.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective per 1,000 of mean strength.
Columbia Arsenal, Tenn	12	3,333.34	83.33	....	57.77
St. Francis Barracks, Fla	107	2,242.98	18.69	28.04	32.75
Fort Barrancas, Fla	108	1,851.85	....	9.26	74.71
Fort Hamilton, N. Y	249	1,799.20	....	32.13	34.43
Fort McPherson, Ga	319	1,764.89	6.27	25.09	35.23
Washington Barracks, D. C	310	1,361.30	3.23	32.26	30.37
Columbus Barracks, Ohio	586	1,312.30	8.53	8.53	39.96
Madison Barracks, N. Y	316	1,132.91	6.33	3.16	23.09
Frankford Arsenal, Pa	38	1,131.58	26.32	....	9.45
Sandy Hook, N. J	44	1,090.91	22.73	....	8.10
Fort Monroe, Va	437	1,041.19	2.29	13.73	21.34
Fort Wadsworth, N. Y	159	1,025.15	....	25.16	19.46
Watervliet Arsenal, N. Y	59	1,016.95	....	16.95	40.63
Jackson Barracks, La	105	1,009.54	9.52	38.09	38.86
Fort McHenry, Md	136	992.64	7.35	36.77	32.81
Newport Barracks, Ky	63	984.13	....	....	24.66
Fort Thomas, Ky	132	962.12	7.58	37.88	22.08
Davids Island, N. Y	547	941.50	1.83	3.66	23.02
Kennebec Arsenal, Me	12	916.67	....	....	4.57
Fort Ontario, N. Y	57	894.74	....	17.54	16.97
Mount Vernon Barracks, Ala	161	869.56	6.21	6.21	32.54
Allegheny Arsenal, Pa	30	833.34	....	....	15.81
Fort Porter, N. Y	106	811.32	....	18.87	19.25
Willets Point, N. Y	363	798.91	2.75	11.02	17.65
Plattsburg Barracks, N. Y	64	765.62	15.62	....	18.49
West Point, N. Y	373	713.15	5.36	....	12.61
Fort Preble, Me	66	712.13	15.15	....	11.67
Fort Adams, R. I	242	657.02	4.13	....	20.77
Fort Myer, Va	173	635.84	5.78	5.78	22.82
Fort Columbus, N. Y	246	585.37	8.13	....	19.28
Fort Trumbull, Conn	65	553.85	....	....	11.13
Augusta Arsenal, Ga	22	500.00	....	45.45	18.55
Fort Schuyler, N. Y	94	478.72	....	10.63	8.27
Fort Niagara, N. Y	146	424.64	....	13.70	9.38
Springfield Armory, Mass	27	407.41	....	....	5.07
Watertown Arsenal, Mass	29	379.32	....	....	16.44
Fort Warren, Mass	101	316.84	....	....	14.86
t Wood, N. J	56	160.71	....	....	.63
	11	454.54	....	....	4.98
Department of the East	6,171	1,029.65	4.86	12.31	25.13

TABLE IX.—*The military posts in each department, showing the rates of admission, death, discharge, and constant non-effectiveness for disease, etc.*—Continued.

DEPARTMENT OF THE MISSOURI.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective per 1,000 of mean strength.
Fort Reno, Okla	302	1,745.03	13.24	6.62	41.90
Fort Sill, Okla	304	1,578.95	3.29	9.87	34.83
Indianapolis Arsenal, Ind	25	1,520.00	....	....	28.38
Camp Oklahoma, Okla	51	1,098.04	....	....	28.85
Fort Mackinac, Mich	110	963.64	....	9.09	21.68
Fort Riley, Kans	600	956.66	1.67	8.33	26.43
Camp at Guthrie, Okla	20	900.00	....	....	18.90
Fort Supply, Ind. T	218	894.49	....	9.17	17.27
Rock Island Arsenal, Ill	64	890.63	....	....	12.03
Fort Wayne, Mich	241	817.43	4.15	8.30	26.16
Fort Sheridan, Ill	308	756.49	....	12.98	17.68
Fort Leavenworth (post), Kans	704	694.60	4.26	9.94	20.34
Fort Leavenworth (prison), Kans	109	688.07	....	36.70	19.36
Jefferson Barracks, Mo	438	563.92	....	6.85	15.66
Fort Brady, Mich	116	491.38	....	....	9.69
St. Louis (Headquarters), Mo	14	285.71	....	....	7.44
Chicago (Headquarters), Ill	52	192.31	....	19.23	11.85
Field	52	730.77	....	....	7.49
Department of the Missouri	3,728	912.27	3.76	9.12	23.03

DEPARTMENT OF DAKOTA.

Fort Custer, Mont	346	1,468.22	2.89	14.45	41.42
Fort Meade, S. Dak	360	1,313.90	5.56	8.33	29.82
Fort Shaw, Mont	78	1,217.95	25.64	12.82	29.37
Fort Sully, S. Dak	142	1,049.30	....	7.04	25.21
Fort Pembina, N. Dak	33	393.94	....	....	5.40
Fort Keogh, Mont	338	908.31	....	8.87	27.31
Fort Snelling, Minn	331	897.29	....	18.13	26.88
Fort Assinniboine, Mont	407	791.15	9.83	17.20	17.22
Fort Yates, N. Dak	230	773.91	....	13.04	36.26
Fort Missoula, Mont	186	720.43	5.38	16.13	12.69
Fort A. Lincoln, N. Dak	63	634.93	....	....	17.18
Fort Yellowstone, Wyo	59	593.22	....	....	21.92
Camp Poplar River, Mont	101	495.08	....	....	9.65
Fort Buford, N. Dak	164	457.32	....	12.20	17.15
Fort Bennett, N. Dak	81	209.87	....	....	10.28
Field	274	616.79	7.30	....	7.09
Department of Dakota	3,193	896.03	4.07	10.65	23.75

DEPARTMENT OF THE PLATTE.

Fort Robinson, Nebr	404	1,561.88	2.48	7.43	26.97
Fort Logan, Colo	287	1,383.28	48.78	10.45	66.94
Fort Du Chesne, Utah	207	1,251.21	....	9.66	23.40
Fort Niobrara, Nebr	396	1,126.27	2.53	7.58	25.31
Fort Sidney, Nebr	191	963.34	15.71	5.24	28.79
Fort McKinney, Wyo	277	906.14	18.05	3.61	24.50
Fort Omaha, Nebr	418	901.91	4.78	16.75	25.04
Fort Randall, S. Dak	82	768.28	12.20	....	20.22
Fort Douglas, Utah	416	747.59	12.02	4.81	19.86
Camp Pilot Butte, Wyo	55	690.91	....	18.18	18.73
Fort Washakie, Wyo	152	559.21	....	6.58	11.54
Fort D. A. Russell, Wyo	377	450.93	....	10.61	13.25
Fort Lewis, Colo	43	395.35	....	....	14.97
Field	385	1,067.54	7.79	....	14.09
Department of the Platte	3,690	986.46	9.49	7.59	24.80

TABLE IX.—*The military posts in each department, showing the rates of admission, death, discharge, and constant non-effectiveness for disease, etc.*—Continued.

DEPARTMENT OF TEXAS.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective per 1,000 of mean strength.
Fort Sam Houston, Tex	499	1,368.74	6.01	26.06	37.35
Camp at Eagle Pass, Tex	52	1,192.29	19.23		17.64
Camp Pena Colorado, Tex	46	1,108.70			13.46
Fort Hancock, Tex	49	1,040.81			27.29
Fort Clark, Tex	335	928.36	11.95	8.96	26.54
Fort Ringgold, Tex	112	883.94		17.86	27.16
Fort Davis, Tex	122	844.27		40.98	36.24
Fort Bliss, Tex	110	781.80			19.11
Fort McIntosh, Tex	153	771.25	13.07	13.07	32.73
Fort Brown, Tex	62	499.99			27.17
San Antonio, Tex	33	333.34			14.69
Camp Del Rio, Tex	4	250.00			6.16
Field	67	522.39			6.79
Department of Texas	1,644	988.78	6.08	15.20	29.15

DEPARTMENT OF ARIZONA.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective per 1,000 of mean strength.
Fort Apache, Ariz	218	1,766.08	4.59	13.76	40.95
Fort Thomas, Ariz	58	1,448.28	17.24		26.46
Fort Marcy, N. Mex	16	1,375.00	62.50		38.19
Fort Wingate, N. Mex	340	1,294.13		5.88	28.46
Fort Stanton, N. Mex	131	1,076.33	15.27		25.70
Fort Bayard, N. Mex	318	968.56	6.29	18.87	34.59
San Carlos, Ariz	221	963.80	4.52	13.57	31.96
Fort Grant, Ariz	289	802.77	6.92	13.84	21.49
San Diego Barracks, Cal	65	800.02		76.92	71.99
Whipple Barracks, Ariz	242	685.95		28.92	18.37
Fort Bowie, Ariz	124	677.43			19.73
Fort Huachuca, Ariz	206	378.65		9.71	14.44
Fort Union, N. Mex	19	105.26			7.79
Fort Lowell, Ariz	13	76.92			16.24
Field	22	363.65			4.98
Department of Arizona	2,282	971.08	4.38	15.02	27.76

DEPARTMENT OF CALIFORNIA.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective per 1,000 of mean strength.
Angel Island, Cal	203	955.67	4.93	24.63	32.02
Presidio, San Francisco, Cal	448	899.56		8.93	29.02
Alcatraz Island, Cal	113	752.22		17.70	26.98
Benicia Arsenal, Cal	51	647.06			14.35
Fort Bidwell, Cal	26	615.38			14.12
Benicia Barracks, Cal	90	577.78		22.22	13.05
Fort Mason, Cal	62	548.38		16.13	15.68
Fort Gaston, Cal	55	436.36			8.77
Field	60	866.67			19.27
Department of California	1,108	804.97	.90	12.64	24.75

DEPARTMENT OF THE COLUMBIA.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective per 1,000 of mean strength.
Fort Canby, Wash	100	1,170.00		30.00	31.52
Fort Walla Walla, Wash	244	758.20			18.84
Boise Barracks, Idaho	111	639.64	9.01	18.02	24.62
Fort Sherman, Idaho	281	572.96	3.56	7.11	17.70
Vancouver Barracks, Wash	429	543.14	6.99	25.64	22.30
Fort Towsend, Wash	64	437.50	15.62		9.68
Fort Spokane, Wash	155	374.20		12.90	13.35
Field	28	285.72			4.90
Department of the Columbia	1,412	609.79	4.25	14.16	19.72

TABLE X.—*The monthly prevalence of disease among the white, colored, and Indian troops in the Army during the year 1891.*

Months.		Mean strength.	Admitted to sick report.						Constantly non-effective.					
			Number.			Ratios per 1,000 of mean strength.			Days.			Ratios per 1,000 of mean strength.		
			Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.	Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.	Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.	Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.
Jan	W	20,148	540	1,588	2,128	26.80	78.82	105.62	8,431	17,224	25,655	13.50	27.58	41.08
	C	2,142	72	187	259	33.61	87.30	120.91	1,211	1,799	3,010	18.24	27.09	45.33
	I													
	T	22,290	612	1,775	2,387	27.46	79.63	107.09	9,642	19,023	28,665	13.95	27.53	41.48
Feb	W	21,123	533	1,913	2,446	25.23	90.56	115.80	8,091	18,401	26,492	13.68	31.11	44.79
	C	2,290	77	210	287	33.62	91.70	125.33	1,020	2,083	3,103	15.91	32.49	48.39
	I													
	T	23,413	610	2,123	2,733	26.05	90.68	116.73	9,111	20,484	29,595	13.90	31.25	45.14
Mar	W	21,397	580	2,675	3,255	27.11	125.02	152.13	8,925	25,717	34,642	13.46	38.77	52.23
	C	2,183	68	430	498	31.15	196.98	228.13	1,245	3,100	4,345	18.40	45.81	64.21
	I													
	T	23,580	648	3,105	3,753	27.48	131.68	159.16	10,170	28,817	38,987	13.91	39.42	53.34
Apr	W	21,432	550	1,967	2,517	25.66	91.78	117.44	7,974	22,081	30,055	12.40	34.34	46.74
	C	2,125	70	247	317	32.94	116.24	149.18	892	2,503	3,395	13.99	39.26	53.25
	I	28												
	T	23,585	620	2,214	2,834	26.29	93.87	120.16	8,866	24,584	33,450	12.53	34.75	47.28
May	W	21,199	630	1,365	1,995	29.72	64.39	94.11	8,366	16,646	25,012	12.73	25.33	38.06
	C	2,041	69	170	239	33.81	83.29	117.10	837	2,173	3,010	13.23	34.34	47.57
	I	262	12	23	35	45.80	87.79	133.59	87	157	244	10.71	19.33	30.04
	T	23,502	711	1,558	2,269	30.25	66.29	96.54	9,290	18,976	28,266	12.75	26.05	38.80
June	W	20,949	626	1,286	1,912	29.88	61.39	91.27	8,558	14,073	22,631	13.62	22.39	36.01
	C	1,964	73	146	219	37.17	74.34	111.51	773	1,832	2,605	13.12	31.09	44.21
	I	354	10	109	119	28.25	307.91	336.16	71	852	928	6.69	80.23	86.91
	T	23,267	709	1,541	2,250	30.47	66.23	96.70	9,402	16,757	26,159	13.47	24.01	37.48
July	W	20,609	769	1,397	2,166	37.31	67.79	105.10	9,738	14,395	24,133	15.24	22.53	37.77
	C	2,024	79	154	233	39.03	76.09	115.12	780	1,587	2,367	12.19	24.80	36.99
	I	430	19	33	52	44.19	76.74	120.93	109	695	804	8.18	52.14	60.32
	T	23,063	867	1,584	2,451	37.59	68.68	106.27	10,627	16,677	27,304	14.86	23.33	38.19
Aug	W	20,446	678	1,586	2,264	33.16	77.57	110.73	9,214	15,026	24,240	14.54	23.71	38.24
	C	2,004	59	164	223	29.44	81.84	111.28	659	1,242	1,901	10.61	19.99	30.60
	I	445	12	55	67	26.97	123.60	150.56	98	778	876	7.10	56.40	63.50
	T	22,895	749	1,805	2,554	32.71	78.84	111.55	9,971	17,046	27,017	14.05	24.02	38.07
Sept	W	20,601	660	1,432	2,092	32.04	69.51	101.55	8,990	14,871	23,861	14.55	24.06	38.61
	C	1,991	70	162	232	35.16	81.37	116.52	711	1,230	1,941	11.90	20.59	32.49
	I	460	16	46	62	34.78	100.00	134.78	139	513	652	10.07	37.17	47.25
	T	23,052	746	1,640	2,386	32.36	71.14	103.51	9,840	16,614	26,454	14.23	24.02	38.25
Oct	W	20,849	661	1,437	2,098	31.70	68.92	100.63	9,870	16,004	25,874	15.27	24.76	40.03
	C	2,007	78	141	219	38.86	70.25	109.12	903	1,310	2,213	14.51	21.06	35.57
	I	519	19	65	84	36.61	125.24	161.85	193	491	684	12.00	30.52	42.51
	T	23,375	758	1,643	2,401	32.43	70.29	102.72	10,966	17,805	28,771	15.13	24.57	39.70
Nov	W	21,063	617	1,467	2,084	29.29	69.65	98.94	9,653	15,414	25,067	15.28	24.39	39.67
	C	2,006	57	197	254	28.41	98.21	126.62	766	1,547	2,313	12.73	25.71	38.43
	I	520	21	43	64	40.38	82.69	123.08	236	511	747	15.13	32.76	47.88
	T	23,589	695	1,707	2,402	29.46	72.36	101.83	10,655	17,472	28,127	15.06	24.69	39.75
Dec	W	21,069	606	2,407	3,013	28.74	114.14	142.87	9,451	20,753	30,204	14.46	31.74	46.20
	C	1,989	58	217	275	29.16	109.10	138.26	1,057	1,979	3,036	17.14	32.09	49.24
	I	535	20	29	49	37.38	54.20	91.59	305	422	727	18.39	25.44	43.83
	T	23,613	684	2,653	3,337	28.97	112.35	141.32	10,813	23,154	33,967	14.77	31.63	46.40
Year	W	20,909	7,450	20,520	27,970	356.31	981.40	1,337.70	107,261	210,605	317,866	14.05	27.60	41.65
	C	2,064	830	2,425	3,255	402.13	1,174.90	1,577.03	10,854	22,385	33,239	14.41	29.71	44.12
	I	296	129	403	532	435.81	1,361.49	1,797.30	1,238	4,419	5,657	11.46	40.90	52.36
	T	23,269	8,409	23,348	31,757	361.38	1,003.40	1,364.78	119,353	237,409	356,762	14.05	27.95	42.01

Names of army or departments.	U. S. Army, 1891.				U. S. Army, white, 1891.				U. S. Army, colored, 1891.				U. S. Army, Indian, 1891.			
Mean strength (corrected for time).	23,269.				20,909.				2,064.				296.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Enteric fever	3.95	.45	.08	.69	4.11	.42	.08	.74	2.91	.89		.23				
Other specific contagious and infectious diseases, including erysipelas	147.11	1.06		3.08	153.23	1.09		3.26	105.62	.89		1.67	3.38			.16
Malarial fevers and resulting conditions	62.23	.11	.08	1.58	64.94	.08	.08	1.65	36.82	.44		1.06	47.30			.66
Typho-malarial fever	.43	.04		.05	.48	.04		.05								
Diarrhea, including cholera morbus	104.65			1.05	103.59			1.05	121.12			1.06	64.19			.45
Dysentery	3.57	.08		.15	3.63	.08		.16	2.91			.03	3.38			.03
Other miasmatic diseases	.17			.01	.19			.01								
Gonorrhea and results	38.08		.11	2.01	37.88		.13	2.02	38.28			1.97	50.68			1.58
Syphilis and results	14.74	.04	1.63	1.77	14.49	.04	1.55	1.79	17.44		2.67	1.78	13.51			.64
Other venereal diseases	19.64			1.22	18.27			1.15	32.46			1.94	27.03			1.18
Vaccina	62.19		.04	1.94	57.73		.04	1.70	34.88			1.03	567.57			25.04
Other enthetic diseases	2.36		.04	.11	2.44		.04	.12	.97			.03	6.76			.04
Alcoholism	40.01	.23	.04	.45	44.19	.25	.04	.49	3.39			.04				
Other dietic diseases	.73			.02	.72			.02	.97			.03				
Rheumatism (including muscular)	75.33		1.25	3.93	69.20		1.21	3.70	138.08		1.78	6.49	70.95			2.30
Other constitutional diseases	4.25	.08	.23	.35	4.26	.04	.21	.36	3.39	.44	.44	.29	10.13			.32
Developmental diseases	.43		.87	.08	.48		.92	.09			.44					
Parasitic diseases	2.84			.07	3.01			.07	1.45			.05				
Headache and neuralgia	46.46		.23	.86	42.76		.25	.85	85.76			.97	33.78			.42
Other diseases of the nervous system	9.20	.38	2.87	.88	9.09	.42	2.97	.87	10.66		1.78	1.17	6.76		3.19	.07
Diseases of the eye	25.10		.87	.79	18.99		.84	.73	84.79		1.33	1.34	40.54			.92
Diseases of the ear	8.38		.30	.31	8.56		.33	.33	4.36			.10	23.65			.31
Catarrhs and common colds	23.51			.23	22.67			.23	34.88			.33	3.38			.03
Bronchitis	98.07	.04	.08	1.75	96.99	.04	.08	1.76	108.53			1.66	101.35			.94
Pneumonia	4.25	.76		.40	3.54	.71		.36	9.69	1.33		.75	16.89			.74
Pulmonary phthisis	2.97	.42	1.59	.87	2.68	.33	1.38	.81	4.84	.89	4.00	1.51	10.14	3.19		1.16
Pleuritis	1.93			.12	1.87			.11	2.42			.16	3.38			.06
Other diseases of the respiratory system	7.52	.04	.11	.30	6.89	.04	.13	.29	13.57			.87	10.13			.61
Diseases of the heart and valves	4.00	.23	.98	.43	4.07	.25	.06	.40	3.80		1.33	.19	3.38			.09
Other diseases of the circulatory system	1.07	.11	.19	.20	1.20	.08	.21	.22		.44						
Tonsillitis	41.73			.63	40.51			.63	57.66			.68	16.89			.22

Dyspepsia, colic, and constipation	56.30	......	.08	.65	53.61	......	.04	.64	76.55	......	.44	.72	104.73	......	......	1.07
Other diseases of the digestive system	73.70	.72	1.21	1.90	71.93	.79	1.13	1.91	93.99	......	2.22	2.02	57.43	......	......	.45
Diseases of the kidneys	1.72	.23	.11	.19	1.72	.25	.08	.17	1.94	......	.44	.40	......	......	......	......
Other diseases of the genito-urinary system (non-venereal)	12.59	......	.45	.77	12.05	......	.46	.78	16.96	......	.44	.67	20.27	......	......	.74
Diseases of the locomotor system (excluding muscular rheumatism)	4.17	.04	.64	.42	3.73	......	.59	.30	9.21	.44	1.33	1.63	......	......	......	......
Diseases of the integumentary system	80.92	......	.11	2.13	83.70	......	.13	2.16	52.33	......	......	1.88	84.46	......	......	1.93
All other diseases	29.57	......	.30	1.02	26.83	......	.33	.99	54.27	......	......	1.20	50.68	......	......	2.13
Heat stroke	3.05	......	......	.06	3.30	......	......	.07	.97	......	......	.003	......	......	......	......
Frostbite and general freezing	2.66	.04	......	.10	1.72	......	......	.05	12.60	.44	......	.06	......	......	......	......
Contusions and sprains	137.31	.04	.11	3.39	133.58	.04	.13	3.41	169.57	......	......	3.12	175.68	......	......	3.71
Dislocations	1.89	......	.19	.17	1.91	......	.17	.17	.97	......	.44	.14	6.76	......	......	.33
Fractures (not gunshot)	7.78	.10	.60	1.23	8.08	.21	.67	1.26	4.84	......	......	.98	6.76	......	......	.47
Incised, lacerated, contused, and punctured wounds	50.58	.04	.38	1.52	47.92	.04	.42	1.43	74.61	......	......	2.43	70.95	......	......	1.36
Shot wounds	2.92	1.25	.87	.93	2.77	1.26	.96	1.00	3.88	.89	......	.21	6.76	3.19	......	.85
All other injuries	42.72	1.47	.60	1.20	42.18	1.63	.67	1.20	43.12	......	......	1.15	77.70	......	......	1.33
Total for disease	1,115.86	5.03	14.47	33.41	1,006.23	4.98	14.23	33.05	1,266.47	5.78	18.66	35.44	1,452.70	3.19	3.19	44.30
Total for injuries	248.91	3.02	2.76	8.60	241.47	3.18	3.01	8.60	310.56	1.33	.44	8.68	344.59	3.19	......	8.06
Total for all causes	1,364.78	8.05	17.23	42.01	1,837.70	8.16	17.24	41.65	1,577.03	7.11	19.10	44.12	1,797.30	6.39	3.19	52.36

TABLE XI.—*The rates, per 1,000 of strength, of admission, death, discharge, and non-effectiveness of the U. S. Army, and of the troops in the several departments, for the year 1891, as compared with those of the decade 1880–'89, and of certain foreign armies.*

Names of army or departments.	U. S. Army, 1880–'89.				U. S. Army, white, 1880–'89.				U. S. Army, colored, 1880–'89.			
Mean strength (corrected for time).	23,928.				21,612.				2,316.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Enteric fever	5.17	.74	.04	....	5.42	.76	.04	....	2.81	.63	....	....
Other specific contagious and infectious diseases, including erysipelas	19.25	.16	.02	....	18.34	.16	.03	....	27.80	.16	....	....
Malarial fevers and resulting conditions	152.12	.26	.17	....	152.49	.26	.17	....	148.87	.28	.12	....
Typho-malarial fever	2.11	.24	....	....	2.18	.22	....	....	1.51	.47	....	....
Diarrhea, including cholera morbus	159.21	.08	.28	....	159.61	.08	.28	....	155.53	.04	.32	....
Dysentery	13.61	.20	.20	....	12.32	.18	.20	....	25.65	.32	.20	....
Other miasmatic diseases	.13	.04	....	....	.14	.03	....	....	.09	.08	....	....
Gonorrhea and results	34.52	....	.26	....	34.40	....	.28	....	35.62	....	.08	....
Syphilis and results	36.52	.03	3.57	....	34.87	.03	3.47	....	51.98	.04	4.58	....
Other venereal diseases	8.05	....	.12	....	8.05	....	11	....	8.12	....	.12	....
Vaccina	12.74	....	....	....	12.72	....	....	....	12.91	....	....	....
Other enthetic diseases	2.44	.004	.01	....	2.34	.004	.01	....	3.45	....	....	....
Alcoholism	54.25	.19	.34	....	59.67	.21	.37	....	3.71	....	.04	....
Other dietic diseases	.58	.05	.05	....	.56	.06	.05	....	.73	....	....	....
Rheumatism (including muscular)	107.28	.05	2.96	....	103.70	.05	2.93	....	140.06	.04	3.24	....
Other constitutional diseases	9.07	.21	.70	....	8.88	.20	.65	....	10.84	.32	1.18	....
Developmental diseases	....	....	....	....	....	....	....	....	....	....	....	....
Parasitic diseases	3.34	....	.004	....	3.54	....	.004	....	1.47	....	....	....
Headache and neuralgia	86.44	....	.38	....	83.66	....	.38	....	112.39	....	.36	....
Other diseases of the nervous system	11.63	.51	3.71	....	11.87	.52	3.77	....	9.28	.43	3.16	....
Diseases of the eye	23.67	....	1.29	....	23.23	....	1.29	....	27.68	....	1.26	....
Diseases of the ear	8.53	.01	.83	....	9.03	.01	.88	....	3.89	....	.39	....
Catarrhs and common colds	86.96	....	.03	....	85.32	....	.03	....	102.20	....	.01	....
Bronchitis	70.43	.08	.57	....	69.31	.09	.59	....	80.83	....	.39	....
Pneumonia	4.86	.86	.15	....	4.54	.75	.14	....	7.82	1.86	.24	....
Pulmonary phthisis	3.51	.56	1.99	....	3.44	.52	1.98	....	4.19	.91	2.17	....
Pleuritis	3.46	.03	.12	....	3.13	.03	.12	....	6.56	.04	.12	....
Other diseases of the respiratory system	8.27	.10	.46	....	7.90	.09	.48	....	11.74	.20	.28	....
Diseases of the heart and valves	3.25	.31	1.54	....	3.33	.32	1.60	....	2.55	.24	1.03	....
Other diseases of the circulatory system	5.01	.32	1.00	....	5.22	.31	1.06	....	3.02	.39	.43	....
Tonsillitis	54.25	....	.01	....	52.41	....	.01	....	71.37	....	....	....
Dyspepsia, colic, and constipation	76.98	....	.25	....	74.64	....	.26	....	98.70	....	.08	....
Other diseases of the digestive system	53.79	.56	2.15	....	53.50	.57	2.18	....	56.43	.43	1.82	....
Diseases of the kidneys	1.35	.20	.27	....	1.35	.20	.26	....	1.34	.20	.36	....
Other diseases of the genito-urinary system (non-venereal)	17.56	.04	1.45	....	17.25	.05	1.41	....	20.38	....	1.86	....
Diseases of the locomotor system (excluding muscular rheumatism)	6.03	.01	1.37	....	6.00	.004	1.33	....	6.26	.08	1.74	....
Diseases of the integumentary system	94.47	.004	.41	....	97.07	.004	.41	....	70.25	....	.39	....
All other diseases	9.67	.04	.96	....	9.65	.05	1.00	....	9.80	.04	.59	....
Heat stroke	1.64	.02	.02	....	1.76	.03	.02	....	.52	....	....	....
Frostbite and general freezing	7.31	.08	.11	....	5.33	.10	.09	....	25.86	.04	.36	....
Contusions and sprains	147.22	.02	.62	....	146.70	.02	.60	....	152.20	.08	.79	....
Dislocations	2.49	.01	.17	....	2.52	.01	.17	....	2.20	....	.16	....
Fractures (not gunshot)	6.76	.13	.77	....	7.01	.12	.80	....	4.40	.16	.43	....
Incised, lacerated, contused, and punctured wounds	43.33	.13	.31	....	41.83	.13	.29	....	57.34	.12	.47	....
Shot wounds	5.09	1.19	1.06	....	4.43	1.09	1.00	....	11.18	2.13	1.58	....
All other injuries	31.75	1.35	.65	....	32.17	1.35	.66	....	27.76	1.30	.63	....
Total for disease	1,250.49	5.89	27.66	....	1,241.13	5.75	27.78	....	1,337.87	7.19	26.57	....
Total for injuries	245.59	2.92	3.72	....	241.75	2.83	3.64	....	281.48	3.83	4.42	....
Total for all causes	1,496.08	8.82	31.37	....	1,482.88	8.58	31.42	....	1,619.34	11.01	30.99	...

TABLE XI.—*The rates, per 1,000 of strength, of admission, death, discharge, and non-effectiveness of the U. S. Army, and of the troops in the several departments, for the year 1891, as compared with those of the decade 1880-'89, and of certain foreign armies.*

Names of army or departments.	Great Britain, 1889.				Italy, 1889.				Prussia, Saxony, Würtemberg, 1888-'89.			
Mean strength (corrected for time).	102,057.				218,917.				420,320.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Enteric fever	1.39	.24	....	....	4.83	1.27	....	....	3.53	.31	....	....
Other specific contagious and infectious diseases, including erysipelas.	9.51	.11	....	....	21.37	.40	....	....	6.74	.10	....	....
Malarial fevers and resulting conditions	6.47	.01	....	....	28.21	.18	.14	....	3.57	....	....	....
Typho-malarial fever	....	....	....	....	....	....	....	....	....	....	....	....
Diarrhea, including cholera morbus.	6.52	....	....	....	8.11	....	....	....	15.08	....	....	....
Dysentery	.68	.03	.04	....	.05	.02	....	....	.11	....	....	....
Other miasmatic diseases	.06	.04	....	....	.01	.01	....	....	.03	.02	....	....
Gonorrhea and results	97.49	....	.07	....	19.90	....	....	....	14.00	....	....	....
Syphilis and results	92.89	.03	1.05	....	8.62	.01	.02	....	11.11	.01	.01	....
Other venereal diseases	21.72	....	....	....	35.97	....	....	....	1.65	....	....	....
Vaccina	....	....	....	....	....	....	....	....	....	....	....	....
Other enthetic diseases	....	....	....	....	.04	.01	....	....	....	....	....	....
Alcoholism	2.56	....	.01	....	.03	.01	....	....	.20	.01	....	....
Other dietic diseases	.08	....	....	....	.27	.01	....	....	.11	.01	....	....
Rheumatism (including muscular)	35.94	.05	.52	....	17.40	.05	.16	....	33.59	.03	.22	....
Other constitutional diseases	21.31	.14	.59	....	9.07	.33	.68	....	12.89	.05	.34	....
Developmental diseases	7.82	.02	1.07	....	....	.01	.04	....	.10	.01	.57	....
Parasitic diseases	26.27	.02	....	....	3.96	....	....	....	8.21	....	....	....
Headache and neuralgia	8.90	.25	1.78	....	5.54	.43	1.40	....	4.94	.19	.82	....
Other diseases of the nervous system.												
Diseases of the eye	12.78	....	.82	....	14.59	....	.69	....	27.35	....	.41	....
Diseases of the ear	6.81	.02	.65	....	5.47	.01	.19	....	10.96	....	.33	....
Bronchitis	45.96	.09	2.89		35.78	.64	.73	....	45.27	.01	4.50	
Pneumonia	5.43	.51			6.15	.89	.21	....	10.96	.44		
Pulmonary phthisis	4.29	1.19			.97	1.21	1.24	....	2.49	.56		
Pleuritis	2.77	.04		....	12.44	.72	1.27	....	4.48	.10		
Other diseases of the respiratory system, including catarrh and common colds	2.38	.03			1.23	.05	.07	....	21.43	.02		
Diseases of the heart and valves	8.89	.39	3.33	....	1.11	.14	.71	....	1.87	.07	1.78	....
Other diseases of the circulatory system	2.18	.10							1.21	....		
Tonsillitis and other diseases of mouth and throat	61.96	....	.88	....	12.03	....	....	....	71.99	....	3.96	....
Other diseases of the digestive system	32.96	.38			22.25	.41	2.77	....	45.66	.17		
Diseases of the kidneys	.50	.11	.52	....	.56	.09	.08	....	.46	.09	.21	....
Other diseases of the genito-urinary system (non-venereal)	17.57	.03			3.40	....	.19	....	6.03	.01		
Diseases of the locomotor system (excluding muscular rheumatism)	6.82	.05	.61	....	3.83	.08	.74	....	25.28	.02	2.49	....
Diseases of the integumentary system	72.84	....	.35	....	19.08	.04	.18	....	196.59	.01	.09	....
All other diseases	8.16	....	....	....	39.37	.22	.16	....	12.59	.02	....	....
Heat stroke	98.52	.69	.71	....	....	.01	.39	....	.23	.01	.91	....
Frostbite and general freezing					....				7.21	.02		
Contusions and sprains					10.01	....			93.95	....		
Dislocations					.25	....			.99	....		
Fractures (not gunshot)					1.04	....			2.72	....		
Incised, lacerated, contused, and punctured wounds					3.66	.01			23.94	.01		
Shot wounds					.29	.32			.60	.31		
All other injuries					4.58	.37			28.76	.57		
Total for disease	631.91	3.88	15.18	....	341.64	7.24	11.67	....	600.48	2.27	15.73	....
Total for injuries	98.52	.69	.71	....	19.83	.71	.39	....	158.41	.92	.91	....
Total for all causes	730.43	4.57	15.89	....	361.47	7.95	12.06	....	758.89	3.19	16.64	....

TABLE XI.—*The rates, per 1,000 of strength, of admission, death, discharge, and non-effectiveness of the U. S. Army, and of the troops in the several departments, for the year 1891, as compared with those of the decade 1880-'89, and of certain foreign armies.*

Names of army or departments.	Department of the East.				Department of the Missouri.				Department of Dakota.			
Mean strength (corrected for time).	6,171.				3,728.				3,193.			
Causes of admission to sick report).	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Enteric fever	4.86	.49	.16	1.05	3.49	1.34	....	.34	2.51	.31	.31	.53
Other specific contagious and infectious diseases, including erysipelas	172.73	.32	....	8.51	133.85	.27	....	2.13	139.36	1.25	....	2.75
Malarial fevers and resulting conditions	74.71	....	.16	1.84	146.46	....	....	3.23	14.41	.31	....	.63
Typho-malarial fever	.49	.16	....	.04	.80	....	....	.12	....	....	....	....
Diarrhea, including cholera morbus	141.47	....	....	1.54	88.52	....	....	.78	94.58	....	....	.85
Dysentery	2.59	....	....	.10	6.17	.27	....	.44	2.51	....	....	.11
Other miasmatic diseases	....	....	....	....	.27	....	....	.03	....	....	....	....
Gonorrhea and results	52.34	....	.49	2.56	35.68	....	....	1.80	28.50	....	....	1.53
Syphilis and results	17.18	....	3.24	2.04	18.78	....	1.61	1.71	7.20	....	.31	.57
Other venereal diseases	24.63	....	....	1.50	23.34	....	....	1.39	15.03	....	....	.65
Vaccina	125.42	....	....	4.31	48.82	....	....	1.22	42.59	....	....	.95
Other enthetic diseases	.97	....	....	.01	3.49	....	....	.15	1.25	....	....	.05
Alcoholism	52.67	.49	....	.59	33.53	....	....	.43	27.87	....	....	.26
Other dietic diseases	1.30	....	....	.04	....	....	....	....	.63	....	....	.02
Rheumatism (including muscular)	70.33	....	1.30	2.83	65.98	....	.27	2.36	78.30	....	.63	3.54
Other constitutional diseases	4.37	.16	.16	.20	2.15	....	....	.38	4.38	....	.94	.59
Developmental diseases	.97	....	1.78	.22	....	....	.80	....	.63	....	.94	.07
Parasitic diseases	4.05	....	....	.06	4.02	....	....	.12	2.19	....	....	.04
Headache and neuralgia	43.91	....	....	.66	39.43	....	.54	.79	55.43	....	....	1.10
Other diseases of the nervous system	9.56	.49	1.46	.87	7.51	....	.80	.55	8.46	.31	.94	.52
Diseases of the eye	17.82	....	.97	.77	17.17	....	.80	.51	24.74	....	1.25	.81
Diseases of the ear	6.97	....	....	.19	9.39	....	.27	.28	10.02	....	....	.46
Catarrhs and common colds	30.47	....	....	.30	18.24	....	....	.16	17.54	....	....	.18
Bronchitis	110.03	....	....	2.05	81.01	....	....	1.36	124.96	....	....	2.09
Pneumonia	2.43	.81	....	.21	3.75	.80	....	.36	3.76	....	....	.41
Pulmonary phthisis	4.05	.65	1.62	.90	3.22	.27	2.15	.59	1.88	.31	.94	.31
Pleuritis	1.62	....	....	.07	1.34	....	....	.08	2.19	....	....	.16
Other diseases of the respiratory system	4.86	.16	.16	.14	7.78	....	....	.31	6.89	....	....	.21
Diseases of the heart and valves	3.08	.16	.97	.35	2.15	.27	.80	.43	3.13	....	.94	.63
Other diseases of the circulatory system	.97	.32	.32	.13	2.15	....	.27	.29	.31	....	....	.02
Tonsillitis	40.51	....	....	.66	31.65	....	....	.44	49.48	....	....	.73
Dyspepsia, colic, and constipation	69.02	....	....	.71	39.43	....	....	.32	54.81	....	....	.55
Other diseases of the digestive system	75.18	.81	1.30	1.54	54.45	.27	1.34	1.75	88.01	1.25	1.57	2.32
Diseases of the kidneys	1.62	.32	.16	.13	3.22	.27	....	.18	.94	.31	.31	.22
Other diseases of the genito-urinary system (non-venereal	11.18	....	.65	.61	13.41	....	....	.88	11.27	....	.94	.82
Diseases of the locomotor system (excluding muscular rheumatism)	3.40	....	.49	.22	5.36	....	.80	.47	3.44	....	.94	.33
Diseases of the integumentary system	83.61	....	.16	2.06	103.81	....	.27	2.77	65.46	....	....	1.51
All other diseases	31.76	....	.49	1.15	12.61	....	....	.41	23.18	....	....	.98
Heat stroke	5.19	....	....	.14	.54	....	....	.003	1.88	....	....	.04
Frostbite and general freezing	.32	....	....	.002	.54	....	....	.005	9.71	....	....	.37
Contusions and sprains	134.33	....	....	3.28	132.78	....	....	3.20	142.19	....	....	3.93
Dislocations	1.13	....	....	.08	1.34	....	.54	.12	2.82	....	....	.14
Fractures (not gunshot)	6.16	.16	.49	.70	6.97	.27	.54	1.86	7.52	....	.94	.81
Incised, lacerated, contused, and punctured wounds	51.37	....	.65	1.57	38.63	....	.54	1.14	53.24	.31	....	1.64
Shot wounds	2.43	.49	.16	.32	3.49	1.61	2.95	3.10	2.51	.63	1.57	.86
All other injuries	36.46	1.46	.65	.89	49.62	2.68	1.61	1.34	42.59	1.88	.31	1.04
Total for disease	1,303.19	5.35	16.04	36.17	1,072.42	3.76	10.73	29.58	1,017.85	4.07	10.96	27.93
Total for injuries	237.40	2.11	1.94	6.99	233.91	4.56	6.17	10.76	262.45	2.82	2.82	8.83
Total for all causes	1,540.59	7.45	17.99	43.16	1,306.33	8.32	16.90	40.34	1,280.30	6.89	13.78	36.76

TABLE XI.—*The rates, per 1,000 of strength, of admission, death, discharge, and non-effectiveness of the U. S. Army, and of the troops in the several departments for the year 1891, as compared with those of the decade 1880–'89, and of certain foreign armies.*

Names of army or departments.)	Department of the Platte.				Department of Texas.				Department of Arizona.			
Mean strength (corrected for time.	3,690.				1,644.				2,282.			
Causes of admission to sick report).	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Enteric fever	6.23	.54		.95	4.26	.61		.58	.44			.05
Other specific contagious and infectious diseases, including erysipelas	213.27	4.61		5.64	46.23	1.22		1.19	131.02	.44		2.64
Malarial fevers and resulting conditions	20.60	.27		.39	80.29	.61		2.26	36.81			1.06
Typho-malarial fever					1.22			.09	.44			.10
Diarrhea, including cholera morbus	87.26			.84	135.64			1.26	111.31			1.04
Dysentery	3.79			.03	7.30			.24	2.63	.44		.13
Other miasmatic diseases												
Gonorrhea and results	29.54			1.50	41.36			2.25	22.35			1.18
Syphilis and results	14.63			1.79	12.77	.61	1.22	1.87	12.27		2.63	1.08
Other venereal diseases	11.65			.75	28.59			2.20	21.91			1.43
Vaccina	26.02			.58	47.45			.96	56.09			2.42
Other enthetic diseases	3.25		.27	.17	6.08			.52	2.19			.07
Alcoholism	42.27	.27		.43	46.84	.61		.54	28.48	.44	.44	.33
Other dietic diseases	.27			.001					1.75			.04
Rheumatism (including muscular)	88.34		.81	3.26	71.17		.61	2.99	102.10		1.31	4.46
Other constitutional diseases	2.98	.27		.14	5.47			.27	2.63		.44	.33
Developmental diseases			.27				.61		.44		.88	.01
Parasitic diseases	.54			.02	4.26			.11	.88			.01
Headache and neuralgia	44.17			.55	57.78		.61	1.13	66.17			.98
Other diseases of the nervous system	7.86	.54	.54	.62	6.69		3.04	.81	12.27		.44	.98
Diseases of the eye	55.82		1.08	1.03	18.86		1.22	.78	23.66		1.31	.98
Diseases of the ear	5.69			.38	12.16		.61	.49	7.01		.44	.12
Catarrhs and common colds	30.62			.29	13.38			.21	36.37			.38
Bronchitis	86.45	.27		1.33	122.26			2.73	65.73			.91
Pneumonia	10.84	2.17		.73	1.22			.05	5.26	1.31		.82
Pulmonary phthisis	1.63	.54	1.35	.48	4.26	1.22	1.22	1.75	2.19		3.07	2.20
Pleuritis	1.90			.06	2.43			.07	2.63			.23
Other diseases of the respiratory system	11.38			.54	7.30		.61	.28	9.64		.44	.50
Diseases of the heart and valves	3.25	.27	1.63	.29	10.95	1.22	1.82	1.03	4.38	.44	.88	.21
Other diseases of the circulatory system	1.08			.33	1.82		.61	.19	.44	.44	.44	.26
Tonsillitis	60.16			.84	35.89			.49	49.96			.78
Dyspepsia, colic, and constipation	41.46			.42	76.64			1.38	74.93		.44	.89
Other diseases of the digestive system	79.40			1.33	62.04	.61	2.43	2.03	90.71	.88	2.63	2.58
Diseases of the kidneys	1.63			.16	1.22	.61		.09	1.31			.14
Other diseases of the genito-urinary system (non-venereal)	13.01		.27	.61	18.25		1.22	1.07	14.46		.44	.64
Diseases of the locomotor system (excluding muscular rheumatism)	4.61		.54	.21	5.47		.61	.38	4.38	.44	.88	1.19
Diseases of the integumentary system	66.40			2.01	125.31			2.50	56.97			1.91
All other diseases	32.79		.81	1.13	52.92			2.12	51.71			1.18
Heat stroke	1.63			.03	12.16			.15	.88			.02
Frostbite and general freezing	5.96	.27		.28					2.19			.04
Contusions and sprains	134.41		.27	3.10	157.54			3.69	141.98	.44	.44	3.60
Dislocations	1.35			.27	2.43			.10	2.19		.44	.18
Fractures (not gunshot)	9.48	.54	.81	1.19	7.30		1.82	1.31	7.89			.79
Incised, lacerated, contused, and punctured wounds	52.30		.54	1.33	58.39			1.46	63.10			2.06
Shot wounds	3.25	1.90	.81	.77	4.26	3.04	.61	.55	3.51	.88	.44	.50
All other injuries	43.90	1.08		1.29	45.62	.61	.61	1.44	40.76	.44	.88	1.59
Total for disease	1,110.84	9.76	7.59	29.85	1,175.79	7.30	13.42	36.97	1.113.93	4.82	17.09	34.24
Total for injuries	252.30	3.79	2.44	8.26	287.71	3.65	3.04	8.71	262.49	1.75	2.19	8.79
Total for all causes	1,363.14	13.55	10.03	38 11	1.463.50	10.95	19.46	45.68	1,376.42	6.57	19.28	43.03

TABLE XI.—*The rates per 1,000 of strength of admission, death, discharge, and non-effectiveness of the U. S. Army, and of the troops in the several departments, for the year 1891, as compared with those of the decade 1880–'89, and of certain foreign armies.*

Names of army or departments.	Department of California.				Department of the Columbia.			
Mean strength (corrected for time).	1,108.				1,412.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Enteric fever	....	......	....	....	7.08	......	....	1.42
Other specific contagious and infectious diseases, including erysipelas	133.57	.90	....	2.62	72.95	......	....	1.17
Malarial fevers and resulting conditions	59.57	......	....	1.30	25.50	......	....	.72
Typho-malarial fever	.90	......	....	.07	....	......	....	....
Diarrhea, including cholera morbus	43.32	......	....	.63	58.78	......	....	.46
Dysentery	1.80	......	....	.02	1.42	......	....	.02
Other miasmatic diseases	....	......	....	....	2.12	......	....	.04
Gonorrhea and results	61.37	......	....	4.18	30.45	......	....	2.01
Syphilis and results	18.95	......	1.80	3.32	14.16	......	4.25	2.76
Other venereal diseases	17.15	......	....	.88	7.79	......	....	.59
Vaccina	9.92	......	....	.46	29.74	......	....	.66
Other enthetic diseases	4.51	......	....	.17	....	......	....	....
Alcoholism	25.27	......	....	.22	46.74	......	....	.66
Other dietic diseases	.90	......	....	.01	.71	......	....	.01
Rheumatism (including muscular)	60.47	......	.90	3.89	51.70	......	1.42	2.21
Other constitutional diseases	11.73	......	....	.69	7.79	......	.71	.53
Developmental diseases	....	......	....	....	.71	......	1.42	.17
Parasitic diseases	6.32	......	....	.36	.71	......	....	.04
Headache and neuralgia	39.71	......	.90	.80	22.66	......	....	.49
Other diseases of the nervous system	7.22	......	....	.86	14.16	.71	2.12	1.38
Diseases of the eye	20.76	......	.90	.60	12.04	......	....	.77
Diseases of the ear	18.05	......	1.80	.72	5.67	......	1.42	.22
Catarrhs and common colds	9.02	......	....	.09	4.96	......	....	.02
Bronchitis	112.82	......	....	2.31	75.78	......	.71	1.18
Pneumonia	1.80	......	....	.28	1.42	.71	....	.27
Pulmonary phthisis	2.71	......	2.71	1.00	3.54	.71	2.83	.53
Pleuritis	.90	......	....	.06	3.54	......	....	.36
Other diseases of the respiratory system	8.12	......	....	.27	6.37	......	....	.27
Diseases of the heart and valves	6.32	......	1.80	.62	6.37	......	.71	.19
Other diseases of the circulatory system	.90	......	....	.15	.71	......	....	.09
Tonsillitis	9.93	......	....	.14	27.62	......	....	.54
Dyspepsia, colic and constipation	55.96	......	....	.47	34.70	......	.71	.75
Other diseases of the digestive system	60.47	......	2.71	1.92	69.40	1.42	.71	2.65
Diseases of the kidneys	.90	......	....	.54	2.12	.71	.71	.20
Other diseases of the genito-urinary system (non-venereal)	10.83	......	....	1.02	10.62	......	....	.67
Diseases of the locomotor system (excluding muscular rheumatism)	3.61	......	.90	.25	3.54	......	....	.19
Diseases of the integumentary system	95.07	......	....	2.45	59.49	......	....	1.56
All other diseases	18.05	......	....	.44	16.29	......	.71	.59
Heat stroke	....	......	....	....	2.12	......	....	.07
Frostbite and general freezing	....	......	....	....	....	......	....	....
Contusions and sprains	143.50	......	....	3.83	126.78	......	.71	2.84
Dislocations	2.71	......	....	.14	4.25	......	1.42	.47
Fractures (not gunshot)	9.93	.90	.90	2.10	12.04	......	.71	2.56
Incised, lacerated, contused, and punctured wounds	47.83	......	1.80	2.07	42.49	......	....	1.36
Shot wounds	2.71	3.61	.90	.35	1.42	2.12	....	.11
All other injuries	64.98	1.80	.90	2.00	32.58	2.12	.71	.60
Total for disease	939.53	.90	14.44	33.82	739.38	4.25	18.41	26.28
Total for injuries	271.66	6.32	4.51	10.50	221.67	4.25	3.54	8.08
Total for all causes	1,211.19	7.22	18.95	44.32	961.05	8.50	21.95	34.36

TABLE XII.—*Specific febrile and acute infectious diseases.*

Diseases.	United States. 1891.	United States. 1890.	United States. 1888-'89.	Great Britain, 1889.	Italy, 1889.	Prussia, Saxony, Würtemberg, 1888-'89.
Cerebro-spinal fever	.09	.04	.09	.02	.05	.05
Chicken pox	.69		.15	.09	.14	
Cholera						
Diphtheria	.21	.21	.39	.01	.05	.89
Enteric fever	3.95	5.24	5.17	1.39	4.83	3.53
Measles	7.74	2.48	3.61	1.50	6.56	1.29
Mumps	2.58	.87	4.11	.68	2.74	(*)
Scarlet fever	.13	.25	.18	1.62	.37	1.29
Smallpox	.22	.04	.13	.02	.61	
Varioloid	.09		.08			.11
Typhus fever			.01	.03	.01	
Whooping cough	.09	.21	.08	.01		
Yellow fever			.18			

*Enumerated under the digestive system.

TABLE XIII.—*Distribution of specific febrile diseases, etc., at United States military posts during the year 1891.*

Posts.	Specific febrile and acute infectious diseases, excluding influenza and erysipelas.																	
	Cerebro-spinal fever.	Chicken pox.	Dengue.	Diphtheria.	Enteric fever.	Measles.	Mumps.	Scarlet fever.	Smallpox.	Varioloid.	Whooping cough.	Other infectious diseases.	Total.	Ratio per 1,000 of mean strength.	Influenza.	Erysipelas.	Aggregate.	Ratio per 1,000 of mean strength.
Columbus Barracks, Ohio		6		1		93	33						133	226.96	45		178	303.75
Fort Myer, Va					15	3							18	104.04	10		28	161.84
Fort Logan, Colo		3			5	4		1				3	16	55.75	153	2	171	595.82
Davids Island, N. Y					2	14							16	29.26	38	2	56	102.38
Fort Monroe, Va		1			3	4						3	11	25.17	124	1	136	311.22
Fort Leavenworth, Kans				1	3	4		1				1	10	14.21	86		96	136.36
Fort Bayard, N. Mex						7	2						9	28.30	47	1	57	179.24
Fort Douglas, Utah					9								9	21.64	119	1	129	310.10
Fort Niobrara, Nebr					1		6						7	17.68	95		102	257.58
Fort Porter, N. Y		1			1	3						2	7	66.04	39	1	47	443.39
Fort Reno, Okla					7								7	23.18	38		45	149.00
Fort Snelling, Minn					1	5			1				7	21.14	34		41	123.86
Fort Thomas, Ky						6					1		7	53.03	29		36	272.72
Washington Barracks, D. C					1	6							7	22.58	31		38	122.59
West Point, N. Y							6					1	7	18.77	89		96	257.37
Fort Wingate, N. Mex						7							7	20.59	126	1	134	394.11
Fort Bliss, Tex					4		1						5	45.46	12	2	19	172.72
Fort Supply, Ind. T						5							5	22.94	39		44	201.82
Benicia Barracks, Cal							4						4	44.44	3		7	77.78
Fort McIntosh, Tex			1						1	2			4	26.14		1	5	32.68
Fort Randall, S. Dak					4								4	48.78	14		18	219.50
Fort Riley, Kans		1		1	2								4	6.67	110		114	190.00
Vancouver Barracks, Wash					2		1	1					4	9.32	2		6	13.99
Fort McHenry, Md					2		1						3	22.06	18		21	154.41
Fort McPherson, Ga						3							3	9.40	121		124	388.71
Fort Meade, S. Dak		1			1	1							3	8.33	53	2	58	161.11
Fort Sam Houston, Tex					3								3	6.01	6	1	10	20.04
Fort Walla Walla, Wash		1			2								3	12.29	47		50	204.91
Fort Yates, N. Dak					3								3	13.04	11	1	15	65.22
Fort Yellowstone, Wyo						3							3	50.85			3	50.85
Field, Dept. of the Platte	1				2								3	7.79	16		19	49.33
Fort Adams, R. I					1	1							2	8.27	26		28	115.70
Fort Barrancas, Fla						2							2	18.52	28		30	277.78
Boise Barracks, Idaho					1	1							2	18.02	1		3	27.03
Fort Canby, Wash					2								2	20.00	21		23	230.00
Fort Hamilton, N. Y						2							2	8.03	74		76	305.22
Jackson Barracks, La						1	1						2	19.05	14		16	152.39
Fort McKinney, Wyo					1							1	2	7.22	42	1	45	162.46
Madison Barracks, N. Y					1				1				2	6.33		1	3	9.49
Mount Vernon Barracks, Ala					2								2	12.42		1	3	18.63
Newport Barracks, Ky					2								2	31.75	6		8	126.99
Fort Ringgold, Tex							2						2	17.86			2	17.86
Fort Sherman, Idaho					2								2	7.12	21		23	81.85
Fort A. Lincoln, N. Dak					1								1	15.87	12		13	206.35

TABLE IX.—*The military posts in each department, showing the rates of admission, death, discharge, and constant non-effectiveness for disease, etc.*—Continued.

DEPARTMENT OF TEXAS.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective per 1,000 of mean strength
Fort Sam Houston, Tex	499	1,368.74	6.01	26.06	37.9
Camp at Eagle Pass, Tex	52	1,192.29	19.23	....	17.6
Camp Pena Colorado, Tex	46	1,108.70	....	....	13.46
Fort Hancock, Tex	49	1,040.81	....	....	27.29
Fort Clark, Tex	335	928.36	11.95	8.96	26.5
Fort Ringgold, Tex	112	883.94	....	17.86	27.16
Fort Davis, Tex	122	844.27	....	40.98	36.2
Fort Bliss, Tex	110	781.80	....	....	19.1
Fort McIntosh, Tex	153	771.25	13.07	13.07	32.73
Fort Brown, Tex	62	499.99	....	....	27.17
San Antonio, Tex	33	333.34	....	....	14.69
Camp Del Rio, Tex	4	250.00	....	....	6.16
Field	67	522.39	....	....	6.79
Department of Texas	1,644	988.78	6.08	15.20	29.15

DEPARTMENT OF ARIZONA.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective per 1,000 of mean strength
Fort Apache, Ariz	218	1,766.08	4.59	13.76	40.96
Fort Thomas, Ariz	58	1,448.28	17.24	....	26.46
Fort Marcy, N. Mex	16	1,375.00	62.50	....	38.19
Fort Wingate, N. Mex	340	1,294.13	....	5.88	28.46
Fort Stanton, N. Mex	131	1,076.33	15.27	....	25.7
Fort Bayard, N. Mex	318	968.56	6.29	18.87	34.59
San Carlos, Ariz	221	963.80	4.52	13.57	31.66
Fort Grant, Ariz	289	802.77	6.92	13.84	21.49
San Diego Barracks, Cal	65	800.02	....	76.92	71.90
Whipple Barracks, Ariz	242	685.95	....	28.92	18.37
Fort Bowie, Ariz	124	677.43	....	....	19.73
Fort Huachuca, Ariz	206	378.65	....	9.71	14.44
Fort Union, N. Mex	19	105.26	....	....	7.79
Fort Lowell, Ariz	13	76.92	....	....	16.2
Field	22	363.65	....	....	4.98
Department of Arizona	2,282	971.08	4.38	15.02	27.76

DEPARTMENT OF CALIFORNIA.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective per 1,000 of mean strength
Angel Island, Cal	203	955.67	4.93	24.63	32.0
Presidio, San Francisco, Cal	448	899.56	....	8.93	29.0
Alcatraz Island, Cal	113	752.22	....	17.70	26.9
Benicia Arsenal, Cal	51	647.06	....	....	14.3
Fort Bidwell, Cal	26	615.38	....	....	14.12
Benicia Barracks, Cal	90	577.78	....	22.22	13.6
Fort Mason, Cal	62	548.38	....	16.13	15.6
Fort Gaston, Cal	55	436.36	....	....	8.7
Field	60	866.67	....	....	19.27
Department of California	1,108	804.97	.90	12.64	24.75

DEPARTMENT OF THE COLUMBIA.

Names of stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Death rate.	Discharge rate.	Constantly non-effective per 1,000 of mean strength
Fort Canby, Wash	100	1,170.00	....	30.00	31.52
Fort Walla Walla, Wash	244	758.20	....	....	18.54
Boise Barracks, Idaho	111	639.64	9.01	18.02	24.62
Fort Sherman, Idaho	281	572.96	3.56	7.11	17.7
Vancouver Barracks, Wash	429	543.14	6.99	25.64	22.3
Fort Towsend, Wash	64	437.50	15.62	....	9.6
Fort Spokane, Wash	155	374.20	....	12.90	13.35
Field	28	285.72	....	....	4.9
Department of the Columbia	1,412	609.79	4.25	14.16	19.72

TABLE X.—*The monthly prevalence of disease among the white, colored, and Indian troops in the Army during the year 1891.*

Months.		Mean strength.	Admitted to sick report.						Constantly non-effective.					
			Number.			Ratios per 1,000 of mean strength.			Days.			Ratios per 1,000 of mean strength.		
			Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.	Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.	Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.	Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.
Jan	W.	20,148	540	1,588	2,128	26.80	78.82	105.62	8,431	17,224	25,655	13.50	27.58	41.08
	C..	2,142	72	187	259	33.61	87.30	120.91	1,211	1,790	3,010	18.24	27.09	45.33
	I..	......	......	......	......	......	......	......	......	......	......	......	......	......
	T.	22,290	612	1,775	2,387	27.46	79.63	107.09	9,642	19,023	28,665	13.95	27.53	41.48
Feb	W.	21,123	533	1,913	2,446	25.23	90.56	115.80	8,091	18,401	26,492	13.68	31.11	44.79
	C..	2,290	77	210	287	33.62	91.70	125.33	1,020	2,083	3,103	15.91	32.49	48.39
	I..	......	......	......	......	......	......	......	......	......	......	......	......	......
	T.	23,413	610	2,123	2,733	26.05	90.68	116.73	9,111	20,484	29,595	13.90	31.25	45.14
Mar	W.	21,397	580	2,675	3,255	27.11	125.02	152.13	8,925	25,717	34,642	13.46	38.77	52.23
	C..	2,183	68	430	498	31.15	196.98	228.13	1,245	3,100	4,345	18.40	45.81	64.21
	I..	......	......	......	......	......	......	......	......	......	......	......	......	......
	T.	23,580	648	3,105	3,753	27.48	131.68	159.16	10,170	28,817	38,987	13.91	39.42	53.34
Apr	W.	21,432	550	1,967	2,517	25.66	91.78	117.44	7,974	22,081	30,055	12.40	34.34	46.74
	C..	2,125	70	247	317	32.94	116.24	149.18	892	2,503	3,395	13.99	39.26	53.25
	I..	28	......	......	......	......	......	......	......	......	......	......	......	......
	T.	23,585	620	2,214	2,834	26.29	93.87	120.16	8,866	24,584	33,450	12.53	34.75	47.28
May	W.	21,199	630	1,365	1,995	29.72	64.39	94.11	8,366	16,646	25,012	12.73	25.33	38.06
	C..	2,041	69	170	239	33.81	83.29	117.10	837	2,173	3,010	13.23	34.34	47.57
	I..	262	12	23	35	45.80	87.79	133.59	87	157	244	10.71	19.33	30.04
	T.	23,502	711	1,558	2,269	30.25	66.29	96.54	9,290	18,976	28,266	12.75	26.05	38.80
June	W.	20,949	626	1,286	1,912	29.88	61.39	91.27	8,558	14,073	22,631	13.62	22.39	36.01
	C..	1,964	73	146	219	37.17	74.34	111.51	773	1,832	2,605	13.12	31.09	44.21
	I..	354	10	109	119	28.25	307.91	336.16	71	852	928	6.69	80.23	86.91
	T.	23,267	709	1,541	2,250	30.47	66.23	96.70	9,402	16,757	26,159	13.47	24.01	37.48
July	W.	20,609	769	1,397	2,166	37.31	67.79	105.10	9,738	14,895	24,133	15.24	22.53	37.77
	C..	2,024	79	154	233	39.03	76.09	115.12	780	1,587	2,367	12.19	24.80	36.99
	I..	430	19	33	52	44.19	76.74	120.93	109	695	804	8.18	52.14	60.32
	T.	23,063	867	1,584	2,451	37.59	68.68	106.27	10,627	16,677	27,304	14.86	23.33	38.19
Aug	W.	20,446	678	1,586	2,264	33.16	77.57	110.73	9,214	15,026	24,240	14.54	23.71	38.24
	C..	2,004	59	164	223	29.44	81.84	111.28	659	1,242	1,901	10.61	19.99	30.60
	I..	445	12	55	67	26.97	123.60	150.56	98	778	876	7.10	56.40	63.50
	T.	22,895	749	1,805	2,554	32.71	78.84	111.55	9,971	17,046	27,017	14.05	24.02	38.07
Sept	W.	20,601	660	1,432	2,092	32.04	69.51	101.55	8,990	14,871	23,861	14.55	24.06	38.61
	C..	1,991	70	162	232	35.16	81.37	116.52	711	1,230	1,941	11.90	20.59	32.49
	I..	460	16	46	62	34.78	100.00	134.78	139	513	652	10.07	37.17	47.25
	T.	23,052	746	1,640	2,386	32.36	71.14	103.51	9,840	16,614	26,454	14.23	24.02	38.25
Oct	W.	20,849	661	1,437	2,098	31.70	68.92	100.63	9,870	16,004	25,874	15.27	24.76	40.03
	C..	2,007	78	141	219	38.86	70.25	109.12	903	1,310	2,213	14.51	21.06	35.57
	I..	519	19	65	84	36.61	125.24	161.85	193	491	684	12.00	30.52	42.51
	T.	23,375	758	1,643	2,401	32.43	70.29	102.72	10,966	17,805	28,771	15.13	24.57	39.70
Nov	W.	21,063	617	1,467	2,084	29.29	69.65	98.94	9,653	15,414	25,067	15.28	24.39	39.67
	C..	2,006	57	197	254	28.41	98.21	126.62	766	1,547	2,313	12.73	25.71	38.43
	I..	520	21	43	64	40.38	82.69	123.08	236	511	747	15.13	32.76	47.88
	T.	23,589	695	1,707	2,402	29.46	72.36	101.83	10,655	17,472	28,127	15.06	24.69	39.75
Dec	W.	21,089	606	2,407	3,013	28.74	114.14	142.87	9,451	20,753	30,204	14.46	31.74	46.20
	C..	1,989	58	217	275	29.16	109.10	138.26	1,057	1,979	3,036	17.14	32.09	49.24
	I..	535	20	29	49	37.38	54.20	91.59	305	422	727	18.39	25.44	43.83
	T.	23,613	684	2,653	3,337	28.97	112.35	141.32	10,813	23,154	33,967	14.77	31.63	46.40
Year.	W.	20,909	7,450	20,520	27,970	356.31	981.40	1,337.70	107,261	210,605	317,866	14.05	27.60	41.65
	C.	2,064	830	2,425	3,255	402.13	1,174.90	1,577.03	10,854	22,385	33,239	14.41	29.71	44.12
	I..	296	129	403	532	435.81	1,361.49	1,797.30	1,238	4,419	5,657	11.46	40.90	52.36
	T.	23,269	8,409	23,348	31,757	361.38	1,003.40	1,364.78	119,353	237,409	356,762	14.05	27.95	42.01

TABLE XI.—*The rates, per 1,000 of strength, of admission, death, discharge, and non-effectiveness of the U. S. Army, and of the troops in the several departments, for the year 1891, as compared with those of the decade 1880–'89, and of certain foreign armies.*

Names of army or departments.	U. S. Army, 1891.				U. S. Army, white, 1891.				U. S. Army, colored, 1891.				U. S. Army, Indian, 1891.			
Mean strength (corrected for time).	23,269.				20,909.				2,064.				296.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Enteric fever	3.95	.45	.08	.69	4.11	.42	.08	.74	2.91	.89	......	.23	......	......	......	......
Other specific contagious and infectious diseases, including erysipelas	147.11	1.06	......	3.08	153.23	1.09	......	3.26	105.62	.89	......	1.67	3.38	......	......	.16
Malarial fevers and resulting conditions	62.23	.11	.08	1.58	64.94	.08	.08	1.65	36.82	.44	......	1.06	47.30	......	......	.66
Typho-malarial fever	.43	.04	......	.05	.48	.04	......	.05	......	......	......	......	......	......	......	......
Diarrhea, including cholera morbus	104.65	......	......	1.05	103.59	......	......	1.05	121.12	......	......	1.06	64.19	......	......	.45
Dysentery	3.57	.08	......	.15	3.63	.08	......	.16	2.91	......	......	.03	3.38	......	......	.03
Other miasmatic diseases	.17	......	......	.01	.19	......	......	.01	......	......	......	......	......	......	......	......
Gonorrhea and results	38.08	......	.11	2.01	37.88	......	.13	2.02	38.28	......	......	1.97	50.68	......	......	1.58
Syphilis and results	14.74	.04	1.63	1.77	14.49	.04	1.55	1.79	17.44	......	2.67	1.78	13.51	......	......	.64
Other venereal diseases	19.64	......	......	1.22	18.27	......	......	1.15	32.46	......	......	1.94	27.03	......	......	1.18
Vaccina	62.19	......	.04	1.94	57.73	......	.04	1.70	34.88	......	......	1.03	567.57	......	......	25.04
Other enthetic diseases	2.36	......	.04	.11	2.44	......	.04	.12	.97	......	......	.03	6.76	......	......	.04
Alcoholism	40.01	.23	.04	.45	44.19	.25	.04	.49	3.39	......	......	.04	......	......	......	......
Other dietic diseases	.73	......	......	.02	.72	......	......	.02	.97	......	......	.03	......	......	......	......
Rheumatism (including muscular)	75.33	......	1.25	3.93	69.20	......	1.21	3.70	138.08	......	1.78	6.49	70.95	......	......	2.30
Other constitutional diseases	4.25	.08	.23	.35	4.26	.04	.21	.36	3.39	.44	.44	.29	10.13	......	......	.32
Developmental diseases	.43	......	.87	.08	.48	......	.92	.09	......	......	.44	......	......	......	......	......
Parasitic diseases	2.84	......	......	.07	3.01	......	......	.07	1.45	......	......	.05	......	......	......	......
Headache and neuralgia	46.46	......	.23	.86	42.76	......	.25	.85	85.76	......	......	.97	33.78	......	......	.42
Other diseases of the nervous system	9.20	.38	2.87	.88	9.09	.42	2.97	.87	10.66	......	1.78	1.17	6.76	......	3.19	.07
Diseases of the eye	25.10	......	.87	.79	18.99	......	.84	.73	84.79	......	1.33	1.34	40.54	......	......	.92
Diseases of the ear	8.88	......	.30	.31	8.56	......	.33	.33	4.36	......	......	.10	23.65	......	......	.31
Catarrhs and common colds	23.51	......	......	.23	22.67	......	......	.23	34.88	......	......	.33	3.38	......	......	.03
Bronchitis	98.07	.04	.08	1.75	96.99	.04	.08	1.76	108.53	......	......	1.66	101.35	......	......	.94
Pneumonia	4.25	.76	......	.40	3.54	.71	......	.36	9.69	1.33	......	.75	16.89	......	......	.74
Pulmonary phthisis	2.97	.42	1.59	.87	2.68	.33	1.38	.81	4.84	.89	4.00	1.51	10.14	3.19	......	1.16
Pleuritis	1.93	......	......	.12	1.87	......	......	.11	2.42	......	......	.16	3.38	......	......	.06
Other diseases of the respiratory system	7.52	.04	.11	.30	6.89	.04	.13	.29	13.57	......	......	.37	10.13	......	......	.61
Diseases of the heart and valves	4.00	.23	.08	.43	4.07	.25	.06	.46	3.80	......	1.33	.19	3.38	......	......	.09
Other diseases of the circulatory system	1.07	.11	.19	.20	1.20	.08	.21	.22	......	.44	......	......	......	......	......	......
Tonsillitis	41.73	......	......	.63	40.51	......	......	.63	57.00	......	......	.08	16.89	......	......	.22

Dyspepsia, colic, and constipation	56.30		.08	.65	53.61		.04	.64	76.55		.44	.72	104.73			1.07
Other diseases of the digestive system	73.70	.72	1.21	1.90	71.93	.79	1.13	1.91	93.99		2.22	2.02	57.43			.45
Diseases of the kidneys	1.72	.23	.11	.19	1.72	.25	.08	.17	1.94		.44	.40				
Other diseases of the genito-urinary system (non-venereal)	12.59		.45	.77	12.05		.46	.78	16.96		.44	.67	20.27			.74
Diseases of the locomotor system (excluding muscular rheumatism)	4.17	.04	.64	.42	3.73		.59	.30	9.21	.44	1.33	1.63				
Diseases of the integumentary system	80.92		.11	2.13	83.70		.13	2.16	52.83			1.88	84.46			1.93
All other diseases	29.57		.30	1.02	26.83		.33	.99	54.27			1.20	50.68			2.13
Heat stroke	3.05			.06	3.30			.07	.97			.003				
Frostbite and general freezing	2.66	.04		.10	1.72			.05	12.60	.44		.66				
Contusions and sprains	137.31	.04	.11	3.39	133.58	.04	.13	3.41	169.57			3.12	175.68			3.71
Dislocations	1.89		.19	.17	1.91		.17	.17	.97		.44	.14	6.76			.33
Fractures (not gunshot)	7.78	.19	.60	1.23	8.08	.21	.67	1.26	4.84			.98	6.76			.47
Incised, lacerated, contused, and punctured wounds	50.58	.04	.38	1.52	47.92	.04	.42	1.43	74.61			2.48	70.95			1.36
Shot wounds	2.92	1.25	.87	.93	2.77	1.26	.96	1.00	3.88	.89		.21	6.76	3.19		.85
All other injuries	42.72	1.47	.60	1.20	42.18	1.63	.67	1.20	43.12			1.15	77.70			1.33
Total for disease	1,115.86	5.03	14.47	33.41	1,096.23	4.98	14.23	33.05	1,266.47	5.78	18.66	35.44	1,452.70	3.19	3.19	44.30
Total for injuries	248.91	3.02	2.76	8.60	241.47	3.18	3.01	8.60	310.56	1.33	.44	8.68	344.59	3.19		8.06
Total for all causes	1,364.78	8.05	17.23	42.01	1,337.70	8.16	17.24	41.65	1,577.03	7.11	19.10	44.12	1,797.30	6.39	3.19	52.36

TABLE XV.—*Twenty posts giving the highest admission rates for malarial diseases, rheumatism, diarrhea, and venereal diseases, respectively, during 1891*—Continued.

IV.—VENEREAL DISEASES.

Names of stations.	Mean strength.	Ratios per 1,000 of mean strength.			
		Admissions.	Deaths.	Discharges for disability.	Constantly non-effective.
Columbus Barracks, Ohio	586	266.20		10.24	15.96
Jackson Barracks, La	105	219.04			14.79
Fort McPherson, Ga	319	216.30		18.80	15.19
Jefferson Barracks, Mo	438	146.12		6.85	7.89
Fort Thomas, Ky	132	143.94			3.86
Fort Ontario, N. Y	57	140.34		35.09	8.41
San Diego Barracks, Cal	65	138.45			7.38
Camp Oklahoma, Okla	51	137.25			3.54
Fort Bliss, Tex	110	136.37			7.99
Fort Barrancas, Fla	108	129.63			9.73
Fort Apache, Ariz	218	127.51		4.59	1.44
Fort Walla Walla, Wash	244	127.05		12.29	15.89
Fort McHenry, Md	136	125.01		7.35	16.27
Fort McIntosh, Tex	153	124.18			10.67
Presidio, San Francisco, Cal	448	122.77			11.23
Washington Barracks, D. C	310	122.57			6.15
Angel Island, Cal	203	113.30		9.85	9.16
Mount Vernon Barracks, Ala	161	111.80			8.33
Fort Sam Houston, Tex	499	104.20		2.00	7.24
Fort Custer, Mont	346.	104.04			4.54

TABLE XVI.—*Twenty posts giving the highest non-effective rates for malarial diseases, rheumatism, diarrheal and venereal diseases, respectively, during 1891.*

I.—MALARIAL DISEASES.

Names of stations.	Mean strength.	Constantly non-effective per 1,000 of mean strength.	Average number sick daily.	Average number of days each case was treated.
Fort Reno, Okla	302	10.42	3.14	8.30
Fort Sill, Okla	304	10.03	3.05	6.70
Camp Oklahoma, Okla	51	9.24	.47	10.12
Fort Ringgold, Tex	112	6.34	.71	23.55
Jackson Barracks, La	105	6.24	.65	9.96
Washington Barracks, D. C	310	6.00	1.86	6.29
Fort Barrancas, Fla	108	5.89	.64	25.73
Newport Barracks, Ky	63	4.57	.29	9.55
St. Francis Barracks, Fla	107	4.15	.44	10.12
Mount Vernon Barracks, Ala	161	3.79	.61	11.74
Fort McPherson, Ga	319	3.63	1.16	13.65
Fort Hancock, Tex	49	3.47	.17	7.75
Jefferson Barracks, Mo	438	3.43	1.50	8.85
San Carlos, Ariz	221	3.37	.75	18.13
Boise Barracks, Idaho	111	3.11	.35	25.20
Fort Clark, Tex	335	3.05	1.02	10.66
Fort McHenry, Md	136	2.92	.40	12.08
Fort Thomas, Ky	132	2.88	.38	7.72
Columbus Barracks, Ohio	586	2.87	1.68	11.35
Camp at Eagle Pass, Tex	52	2.85	.15	4.91

TABLE XVI.—*Twenty posts giving the highest non-effective rates for malarial diseases, rheumatism, diarrheal, and venereal diseases, respectively, during 1891*—Continued.

II.—RHEUMATISM.

Names of stations.	Mean strength.	Constantly non-effective per 1,000 of mean strength.	Average number sick daily.	Average number of days each case was treated.
Jackson Barracks, La	105	13.02	1.37	38.38
Fort Yates, N. Dak	230	9.97	2.29	33.48
Fort Barrancas, Fla	108	9.72	1.05	23.94
San Diego Barracks, Cal	65	9.31	.61	55.25
Fort Canby, Wash	100	7.45	.75	13.60
Fort Robinson, Nebr	404	7.45	3.01	12.63
Fort Wadsworth, N. Y	159	7.08	1.13	37.36
Camp Pilot Butte, Wyo	55	6.82	.38	27.40
Presidio, San Francisco, Cal	448	6.68	2.99	37.66
Fort Apache, Ariz	218	6.23	1.36	9.19
Fort Ringgold, Tex	112	6.12	.68	35.71
Fort Bayard, N. Mex	318	5.90	1.88	40.29
Fort Hamilton, N. Y	249	5.66	1.41	22.35
San Carlos, Ariz	221	5.44	1.20	16.26
Madison Barracks, N. Y	316	5.18	1.64	24.92
Fort Thomas, Ariz	58	5.15	.30	15.57
Fort Grant, Ariz	289	5.08	1.47	21.44
Fort Snelling, Minn	331	4.94	1.64	18.66
Fort McKinney, Wyo	277	4.77	1.32	18.54
Fort Custer, Mont	346	4.70	1.63	13.81

III.—DIARRHEAL DISEASES.

Fort Barrancas, Fla	108	18.14	1.96	11.53
Fort Stanton, N. Mex	131	5.10	.67	5.81
Fort McPherson, Ga	319	4.53	1.44	4.36
Fort Thomas, Ariz	58	3.97	.23	4.67
Fort Sill, Okla	304	3.46	1.05	4.99
Fort Apache, Ariz	218	2.93	.65	3.08
St. Francis Barracks, Fla	107	2.87	.31	2.67
Madison Barracks, N. Y	316	2.79	.88	3.62
Fort Hamilton, N. Y	249	2.75	.68	3.05
Fort Reno, Okla	302	2.55	.77	4.34
Fort Myer, Va	173	2.45	.42	9.12
Fort Sam Houston, Tex	499	2.42	1.21	4.25
Fort Logan, Colo	287	2.35	.68	9.15
Camp at Eagle Pass, Tex	52	2.16	.11	2.05
Fort Ringgold, Tex	112	2.13	.24	4.35
Fort Riley, Kans	600	1.98	1.19	9.84
Chicago, Ill	52	1.95	.10	37.00
Fort Monroe, Va	437	1.81	.79	2.81
Fort Hancock, Tex	49	1.67	.08	6.00
Watervliet Arsenal, N. Y	59	1.67	.10	2.77

IV.—VENEREAL DISEASES.

Camp at Eagle Pass, Tex	52	16.28	.85	77.25
Fort McHenry, Md	136	16.27	2.21	47.53
Columbus Barracks, Ohio	586	15.95	9.35	21.88
Fort Walla Walla, Wash	244	15.89	3.88	45.65
Fort McPherson, Ga	319	15.19	4.85	25.64
Jackson Barracks, La	105	14.79	1.55	24.65
Fort Schuyler, N. Y	94	14.02	1.32	96.20
Presidio, San Francisco, Cal	448	11.23	5.04	33.42
Fort McIntosh, Tex	153	10.67	1.63	31.37
Fort Bayard, N. Mex	318	9.77	3.11	35.44
Fort Barrancas, Fla	108	9.73	1.05	27.43
Angel Island, Cal	203	9.16	1.86	29.52
Fort Ontario, N. Y	57	8.41	.48	21.87
Mount Vernon Barracks, Ala	161	8.33	1.34	27.22
Fort Bliss, Tex	110	7.99	.88	21.40
Jefferson Barracks, Mo	438	7.89	3.46	19.72
Fort Gaston, Cal	55	7.67	.42	77.00
Fort Omaha, Nebr	418	7.59	3.17	30.47
San Diego Barracks, Cal	65	7.38	.48	19.44
Fort Sam Houston, Tex	499	7.24	3.61	25.37

TABLE XVII.—*Prevalence of alcoholism at the various posts and its influence on the effective force of the garrisons for the year 1891.*

Names of stations.	Mean strength.	Ratio per 1,000 of mean strength.		Names of stations.	Mean strength.	Ratio per 1,000 of mean strength.	
		Admissions.	Constantly non-effective.			Admissions.	Constantly non-effective.
Camp Pilot Butte, Wyo	55	218.18	2.24	Fort Monroe, Va	437	36.61	.21
Camp Pena Colorado, Tex	46	195.65	2.38	Fort McKinney, Wyo	277	36.10	.39
Fort Ontario, N. Y	57	192.99	2.50	Fort Sully, S. Dak	142	35.21	.25
Jackson Barracks, La	105	180.95	2.04	Fort Robinson, Nebr	404	34.65	.29
Madison Barracks, N. Y	316	164.56	1.98	Watertown Arsenal, Mass	29	34.48	.47
Fort Canby, Wash	100	160.00	1.34	Angel Island, Cal	203	34.48	.19
Willets Point, N. Y	363	134.99	1.21	Fort Assinniboine, Mont	407	34.40	.32
Plattsburg Barracks, N. Y	64	125.00	1.16	Fort Omaha, Nebr	418	33.49	.39
San Diego Barracks, Cal	65	123.07	2.82	Benicia Barracks, Cal	90	33.33	.37
St. Francis Barracks, Fla	107	121.50	1.54	Fort Hamilton, N. Y	249	32.13	.36
Fort McHenry, Md	136	110.29	1.01	Fort Leavenworth, Kans	704	31.25	.32
Whipple Barracks, Ariz	242	99.17	.83	Fort Meade, S. Dak	360	30.55	.15
Camp at Eagle Pass, Tex	52	96.16	1.32	San Antonio, Tex	33	30.30	.42
Fort Brady, Mich	116	94.83	1.11	Fort Preble, Me	66	30.30	.17
Fort McPherson, Ga	319	84.64	.87	Fort Warren, Mass	101	29.70	.79
Fort Niobrara, Nebr	396	78.28	.87	Fort Niagara, N. Y	146	27.40	.19
Fort Thomas, Ky	132	75.76	.56	Fort Snelling, Minn	331	27.19	.30
Fort Wadsworth, N. Y	159	75.47	.67	Boise Barracks, Idaho	111	27.03	.12
Fort Douglas, Utah	416	67.31	.83	Fort Ringgold, Tex	112	26.78	.24
Fort Brown, Tex	62	64.52	.80	Fort Riley, Kans	600	26.67	.47
Fort Schuyler, N. Y	94	63.83	.64	Alcatraz Island, Cal	113	26.55	.59
Fort Reno, Okla	302	62.92	.99	Fort Walla Walla, Wash	244	24.59	.28
Fort Du Chesne, Utah	207	62.81	.46	Presidio, San Francisco, Cal	448	22.32	.15
Fort Townsend, Wash	64	62.50	.64	Fort Sidney, Nebr	191	20.94	.20
Fort Marcy, N. Mex	16	62.50	.34	Fort Hancock, Tex	49	20.41	.22
Fort Sheridan, Ill	308	61.69	.77	Camp Poplar River, Mont	101	19.80	.11
Washington Barracks, D. C	310	61.29	1.11	Fort Sill, Okla	304	19.74	.15
Benicia Arsenal, Cal	51	58.82	.48	Camp Oklahoma, Okla	51	19.61	.16
Vancouver Barracks, Wash	429	58.27	.91	Mount Vernon Barracks, Ala.	161	18.63	.09
Fort Mackinac, Mich	110	54.55	.65	Fort Supply, Ind. T	218	18.35	.53
Fort Keogh, Mont	338	53.25	.42	Leavenworth Prison, Kans	109	18.35	.08
Fort Union, N. Mex	19	52.63	.43	Fort Gaston, Cal	55	18.18	.20
Fort Yellowstone, Wyo	59	50.85	.70	Fort Wood, N. J	56	17.86	.05
Camp at Guthrie, Okla	20	50.00	.41	Fort Sherman, Idaho	281	17.79	.19
Fort Logan, Colo	287	48.78	.51	Fort Wingate, N. Mex	340	17.65	.23
Fort Sam Houston, Tex	499	48.10	.77	Fort Myer, Va	173	17.34	.16
Fort Clark, Tex	335	47.76	.29	Fort Columbus, N. Y	246	16.26	.19
Newport Barracks, Ky	63	47.62	.35	Fort Missoula, Mont	186	16.13	.12
Rock Island Arsenal, Ill	64	46.87	.64	Fort Mason, Cal	62	16.13	.09
Fort Barrancas, Fla	108	46.30	1.34	Fort A. Lincoln, N. Dak	63	15.87	.17
Fort Bliss, Tex	110	45.46	.55	Columbus Barracks Ohio	586	13.65	.15
Fort Spokane, Wash	155	45.16	.92	Fort McIntosh, Tex	153	13.07	.07
Fort Yates, N. Dak	230	43.48	.34	Fort Randall, S. Dak	82	12.20	.05
Fort Buford, N. Dak	164	42.68	.48	Jefferson Barracks, Mo	438	11.42	.08
Fort Davis, Tex	122	40.98	.34	Davids Island, N. Y	547	10.97	.11
Fort Bowie, Ariz	124	40.32	.27	West Point, N. Y	373	10.72	.15
Fort Huachuca, Ariz	206	38.84	.41	Fort Bayard, N. Mex	318	9.43	.18
Fort Stanton, N. Mex	131	38.17	.56	Fort Apache, Ariz	218	9.17	.03
Fort Porter, N. Y	106	37.74	.54	Fort Custer, Mont	346	8.67	.32
Fort Wayne, Mich	241	37.34	.43	Fort Grant, Ariz	289	3.46	.07
Fort Adams, R. I	242	37.19	.68	In the field, U. S. Army	899	8.90	.05
Fort D. A. Russell, Wyo	377	37.14	.45				

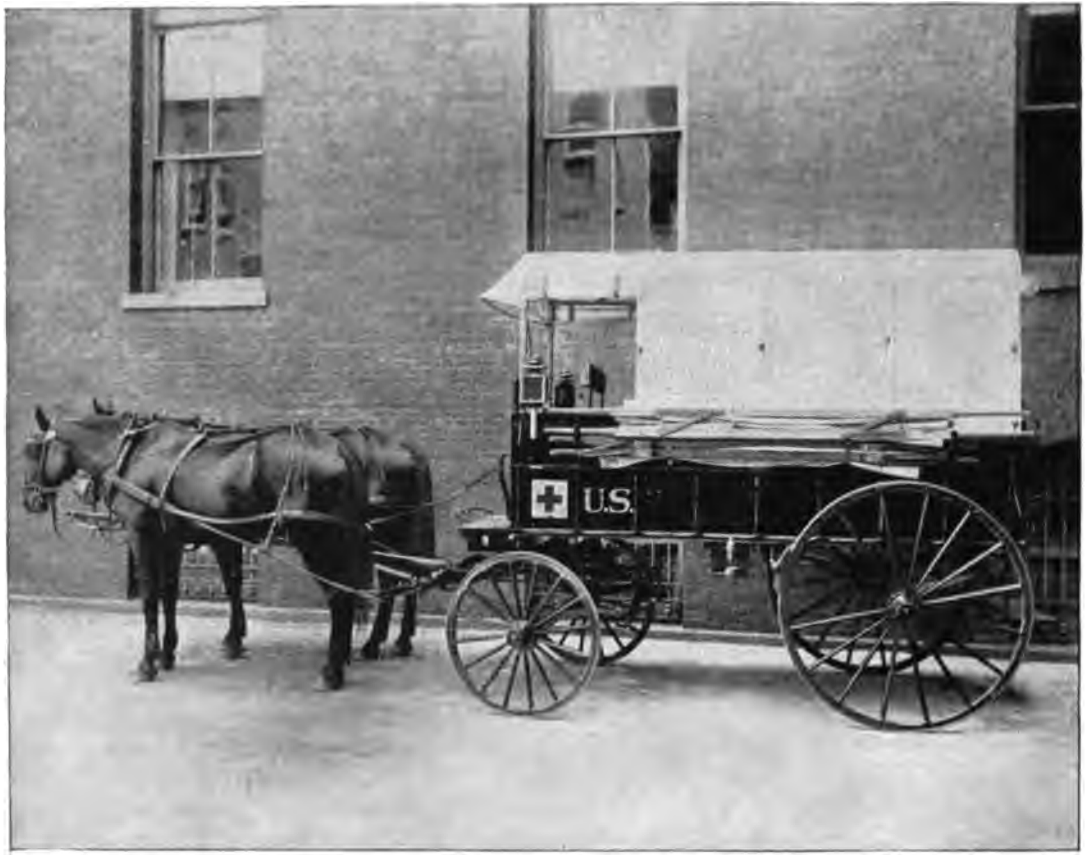
TABLE XVIII.—*Loss and gain to the Hospital Corps for the year ending June 30, 1892.*

	Hospital stewards.	Acting hospital stewards.	Privates.	Matrons.
In service July 1, 1891	124	71	530	144
GAIN.				
Reënlisted	24	6	37	
Appointed	13			86
Rejoined from desertion			2	
Detailed from private, Hospital Corps		34		
Transferred from line			211	
Enlisted			36	
Reënlisted from other corps			15	
Reduced from acting hospital steward			3	
Total to be accounted for	161	111	834	230
Total gain	37	40	304	86
LOSS.				
Discharged:				
Expiration of service	27	17	127	
For disability	1	1	9	
By general court-martial			6	
By order	3	6	75	92
Promoted		11	33	
Retired	4		2	
Died	1		2	
Reduced to private		3		
Deserted	1		7	
Dropped			1	
Total loss	37	38	262	92
In service June 30, 1892	124	73	572	138

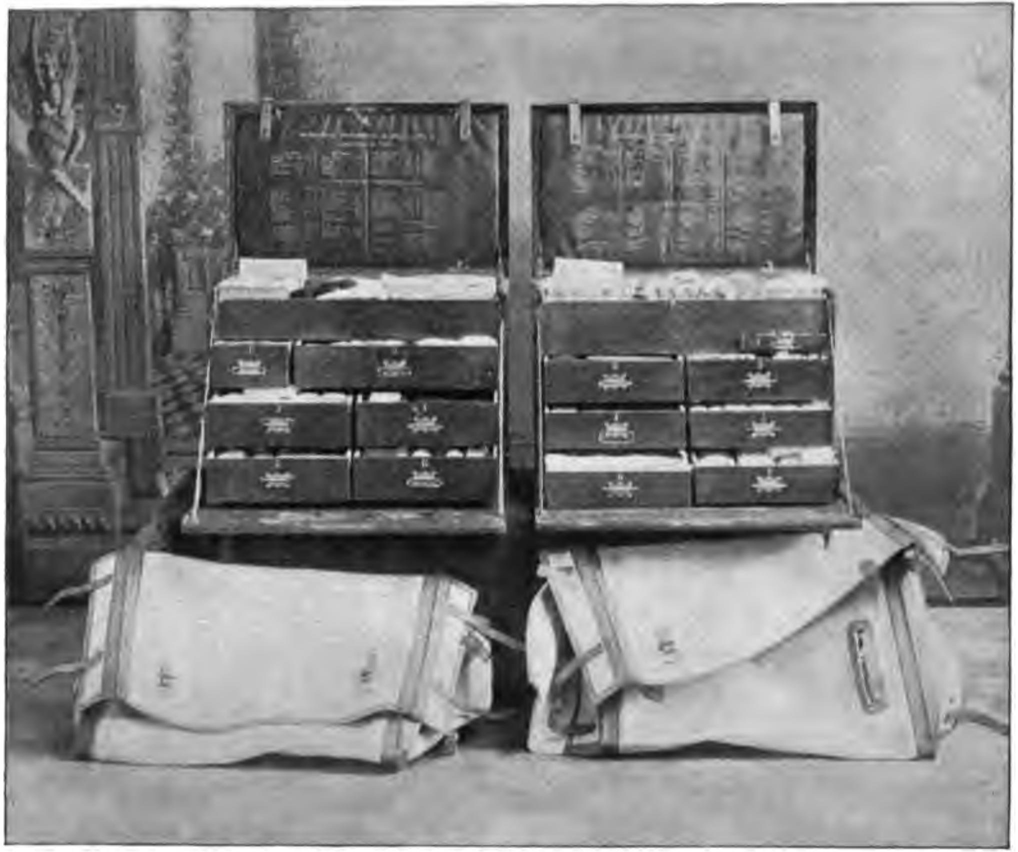
TABLE XIX.—*Causes and ratios of rejections among 25,050 recruits examined during the year 1891.—White, 23,725; colored, 1,325.*

Causes of rejection.	White.				Colored.				White and colored.			
	Rejected on primary examination.	Rejected on secondary examination.	Total.	Ratios per 1,000.	Rejected on primary examination.	Rejected on secondary examination.	Total.	Ratios per 1,000.	Rejected on primary examination.	Rejected on secondary examination.	Total.	Ratios per 1,000.
Malarial diseases	5	.....	5	.2	.....	.....	.....	.....	5	.....	5	.2
Enthetic diseases	363	16	379	16.0	41	4	45	34.0	404	20	424	16.9
Dietic diseases	561	.....	561	23.6	7	.....	7	5.3	568	.....	568	22.7
Constitutional diseases	55	5	60	2.5	1	.....	1	.8	56	5	61	2.4
Developmental diseases	1,217	17	1,234	52.0	105	.....	105	79.2	1,322	17	1,339	53.5
Parasitic diseases	53	.....	53	2.2	2	.....	2	1.5	55	.....	55	2.2
Nervous diseases	50	14	64	2.7	17	.....	17	12.8	67	14	81	3.2
Diseases of the eye	2,044	14	2,058	86.7	54	.....	54	40.8	2,098	14	2,112	84.3
Diseases of the ear	173	11	184	7.8	3	1	4	3.0	176	12	188	7.5
Diseases of the nose	16	1	17	.7	.....	.....	.....	.....	16	1	17	.7
Respiratory diseases	37	4	41	1.7	1	1	2	1.5	38	5	43	1.7
Diseases of the circulatory system	648	21	669	28.2	26	.....	26	19.6	674	21	695	27.7
Diseases of the digestive system	980	15	995	41.9	39	.....	39	29.4	1,019	15	1,034	41.3
Diseases of the lymphatic system	24	1	25	1.1	6	1	7	5.3	30	2	32	1.3
Diseases of the genito-urinary system	1,009	14	1,023	43.1	32	1	33	24.9	1,041	15	1,056	42.2
Diseases of the locomotor system	524	17	541	22.8	28	1	29	21.9	552	18	570	22.8
Diseases of the integumentary system	175	4	179	7.5	6	.....	6	4.5	181	4	185	7.4
Results of injuries	151	7	158	6.7	5	.....	5	3.8	156	7	163	6.5
Over age	260	.....	260	11.0	30	.....	30	22.6	290	.....	290	11.6
Under age	862	15	877	37.0	83	.....	83	62.6	945	15	960	38.3
Over height	30	.....	30	1.3	1	.....	1	.8	31	.....	31	1.2
Under height	204	.....	204	8.6	18	.....	18	13.6	222	.....	222	8.9
Over weight	79	.....	79	3.3	.....	.....	.....	.....	79	.....	79	3.2
Under weight	632	.....	632	26.6	27	.....	27	20.4	659	.....	659	26.3
Under size	467	.....	467	19.7	25	.....	25	18.9	492	.....	492	19.6
Obesity	9	.....	9	.4	.....	.....	.....	.....	9	.....	9	.4
Illiterate	4	.....	4	.2	.....	.....	.....	.....	4	.....	4	.2
Imperfect knowledge of English	503	.....	503	21.2	7	.....	7	5.3	510	.....	510	20.4
Moral depravity	124	.....	124	5.2	9	.....	9	6.8	133	.....	133	5.3
Character bad and doubtful	224	6	230	9.7	20	2	22	16.6	244	8	252	10.1
Deserters and ex-convicts	30	27	57	2.4	1	1	2	1.5	31	28	59	2.4
Discharged for disability and by order	28	39	67	2.8	2	4	6	4.5	30	43	73	2.9
Married or having dependent relatives	270	4	274	11.5	32	.....	32	24.2	302	4	306	12.2
Declined	566	.....	566	23.9	5	.....	5	3.8	571	.....	571	22.8
General unfitness and unclassified	2,507	.....	2,507	105.7	207	.....	207	156.2	2,714	.....	2,714	108.3
Aggregate	14,884	252	15,136	638.0	840	16	856	646.0	15,724	268	15,992	638.4

No. 1.

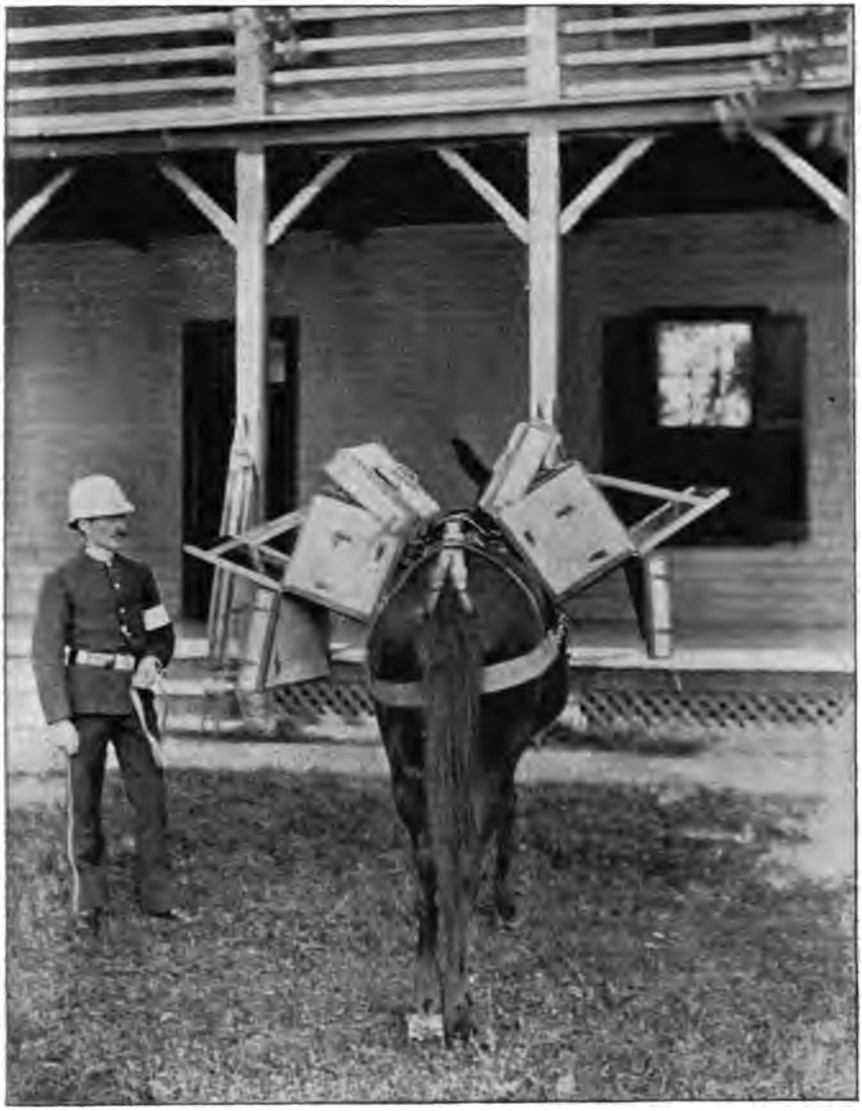


Ambulance, U. S. Army Pattern, 1892.



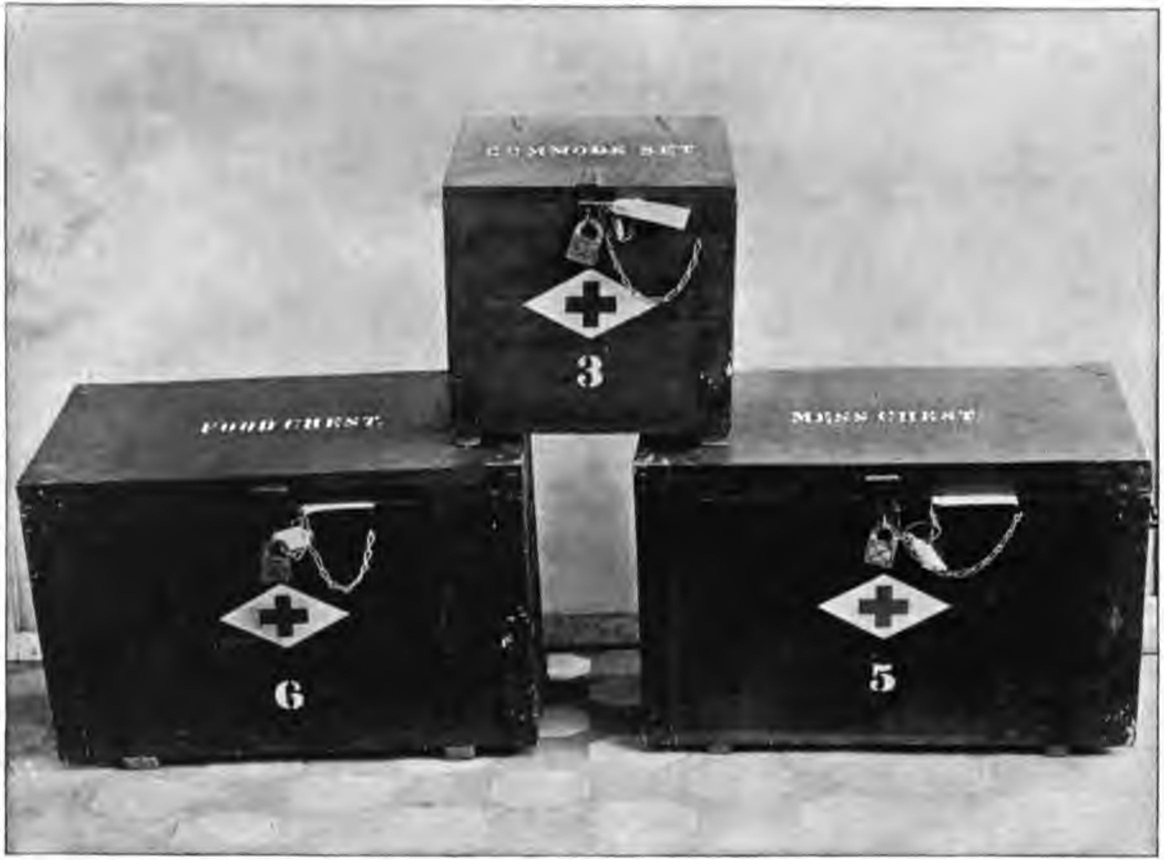
Surgical and Medical Chest. U. S. Army Medical Department.

No. 4.



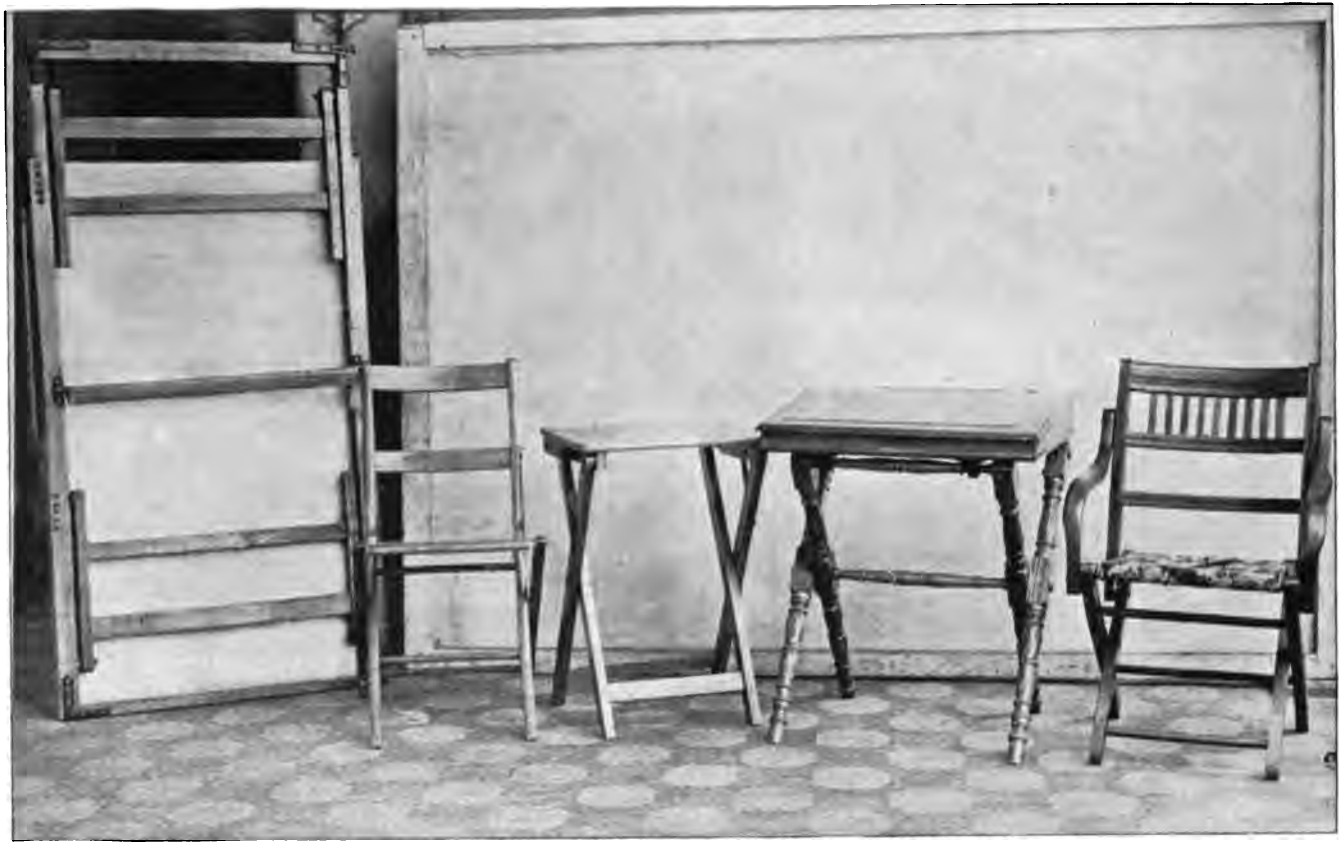
PACK-SADDLE, MEDICAL DEPARTMENT, AND MEDICAL AND SURGICAL CHESTS IN POSITION.

No. 5.



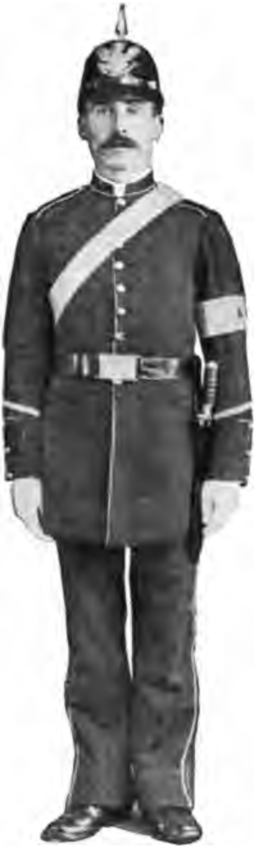
FOOD CHEST, COMMODE SET, AND MESS CHEST. U. S. ARMY MEDICAL DEPARTMENT.

No. 6.



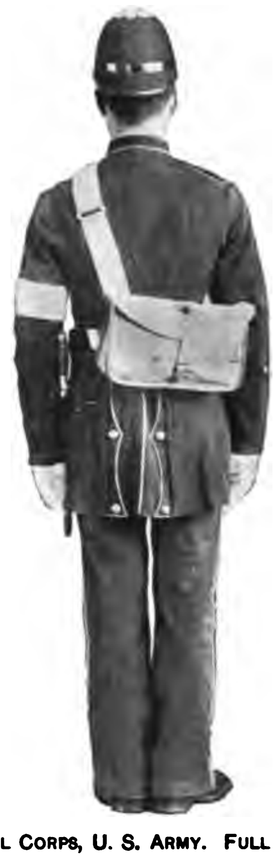
Folding Field Furniture. U. S. Army Medical Department.

No. 7.



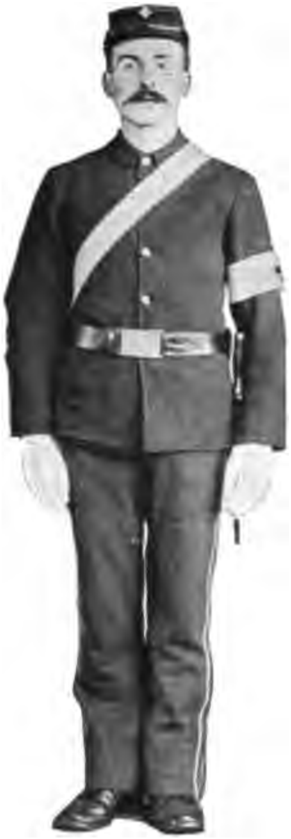
PRIVATE HOSPITAL CORPS, U. S. ARMY. FULL UNIFORM (FRONT).

No. 8.



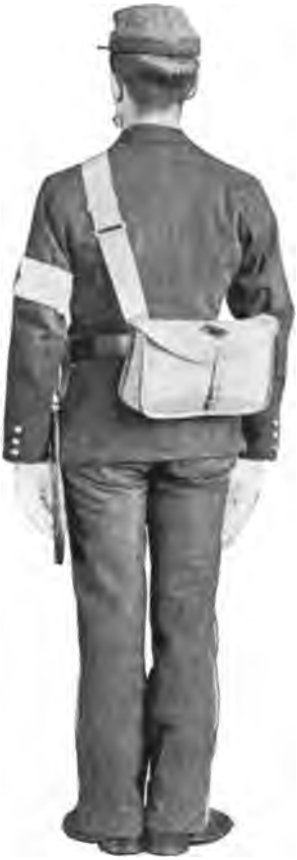
PRIVATE HOSPITAL CORPS, U. S. ARMY. FULL UNIFORM (REAR).

No. 9.



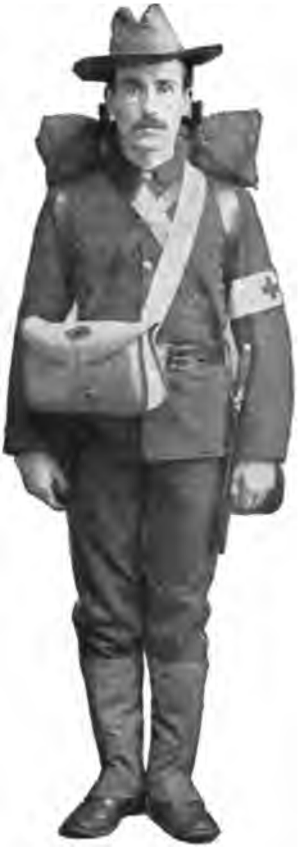
PRIVATE HOSPITAL CORPS, U. S. ARMY. FATIGUE DRESS (FRONT).

No. 10.



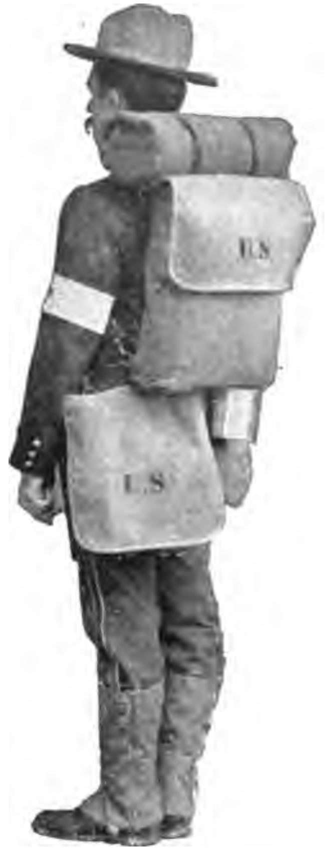
PRIVATE HOSPITAL CORPS, U. S. ARMY. FATIGUE DRESS (REAR).

No. 11.



PRIVATE HOSPITAL CORPS, U. S. ARMY. FIELD EQUIPMENT (FRONT VIEW).

No. 12.



PRIVATE HOSPITAL CORPS, U. S. ARMY. FIELD EQUIPMENT (REAR VIEW).

REPORT

OF THE

SURGEON-GENERAL OF THE ARMY

TO THE

SECRETARY OF WAR

FOR THE

FISCAL YEAR ENDING JUNE 30, 1893.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1893.

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REPORT

OF

THE SURGEON-GENERAL.

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
Washington, D. C., September 4, 1893.

SIR: I have the honor to submit herewith a statement of disbursements made during the fiscal year ending June 30, 1893, from the appropriation made by act of Congress approved July 16, 1892, for the expenses of the Medical Department of the Army, and the balance on hand at the close of said fiscal year, viz:

Medical and Hospital Department, 1893:		
Appropriated by act approved July 16, 1892		$170,000.00
Refunded during the year		219.17
Total to be accounted for		170,219.17
Disbursed during the year:		
Medical and hospital supplies	$56,424.89	
Pay of employés	42,072.39	
Expenses of medical supply depots	158.42	
Medical attendance and medicines	3,180.02	
Washing at post hospitals	1,949.64	
Miscellaneous expenses	753.44	
		104,538.80
Balance on hand June 30, 1893		65,680.37

The whole of this balance remaining on hand at the close of the fiscal year has already been or will be expended in payment for supplies contracted for, and for other obligations incurred prior to July 1, 1893.

In addition to the above-stated sum of $3,180.02, expended for medical attendance and medicines, vouchers amounting in all to $13,357.38 have also been approved at this office up to July 26, 1893, for medical attendance rendered at posts where there were no medical officers of the Army, and forwarded to the Paymaster-General of the Army for payment from the appropriation made by act approved July 16, 1892, viz: "For pay for medical services at posts where there are no medical officers, $15,000." This amount is, under the provisions of the above-cited act, to be disbursed and accounted for by the Pay Department of the Army. The total expenditures of the Medical Department for medical attendance and medicines furnished to officers and enlisted men of the Army during the fiscal year ending June 30, 1893, in cases where the services of a medical officer of the Army could not be obtained, therefore, amounted to $16,537.40. It is estimated that other accounts for similar services rendered during the fiscal year, amounting to $1,500, will hereafter be presented to this office for payment.

The approximate value of the medical and hospital supplies actually issued during the fiscal year ended June 30, 1893, was $124,000.

I have the honor to submit also a statement showing the expenditures during the last fiscal year from the appropriations for the Medical Department for prior fiscal years and the balance on hand June 30, 1893, viz:

Medical and Hospital Department, 1892:		
Balance on hand July 1, 1892		$77,183.54
Appropriated by act approved March 3, 1893		1,800.00
Refunded during the year		109.38
Total to be accounted for		79,092.92
Disbursed during the year:		
Medical and hospital supplies	$69,820.85	
Pay of employés	200.00	
Expenses of medical supply depots	1.66	
Medical attendance and medicines	2,198.29	
Miscellaneous expenses	188.57	
		72,409.37
Balance on hand June 30, 1893		6,683.55

Medical and Hospital Department, 1891:		
Balance on hand July 1, 1892		38,722.91
Disbursed during the year:		
Medical and hospital supplies	$6,703.00	
Medical attendance and medicines	152.83	
		6,855.83
Carried to surplus fund		31,867.08

Medical and Hospital Department—certified claims, 1893:	
Appropriated by act approved—	
July 28, 1892 (warrant No. 6)	31.35
March 3, 1893 (warrant No. 16)	114.00
Total to be accounted for	145.35
Disbursed during the year	145.35

Since the last annual report the new Standard Supply Table of the Medical Department has been issued, and many copies have been distributed by request to officers of the National Guard. Medical officers of these organizations have taken much interest in the new field equipment of this department, and it is understood that in several States portions of this equipment, especially the field case and orderly and hospital corps pouches, have been or soon will be adopted.

The ice machines at posts on the southern border give satisfactory results and are of much benefit to the sick as well as to the garrisons; all are now self-supporting.

Library of the Surgeon-General's office, 1892:	
Balance from previous fiscal year	$2,274.24
Disbursed during the year	2,274.24

Library of the Surgeon-General's office, 1893:	
Appropriated by act of July 16, 1892	7,000.00
Disbursed during the year	6,986.79
Balance June 30, 1893	13.21

Army Medical Museum, 1891:		
Balance from previous fiscal year		4.15
Disbursed during the year	$3.50	
Carried to the surplus fund	.65	
		4.15

Army Medical Museum, 1892:		
Balance from previous fiscal year		$1,050.14
Disbursed during the year		1,050.14
Army Medical Museum, 1893:		
Appropriated by act of July 16, 1892		5,000.00
Disbursed during the year		3,600.97
Balance June 30, 1893		1,399.03
Army and Navy General Hospital for improvement and maintenance of grounds.		
Appropriated by act of August 5, 1892		7,960.60
Disbursed during the year		3,921.11
Balance on hand June 30, 1893		4,039.49
Artificial limbs, 1890:		
Balance from previous fiscal year		818.80
From transfer account		37.38
Total to be accounted for		856.18
Disbursed during the year	$37.38	
Carried to the surplus fund	818.80	
		856.18
Artificial limbs, 1891:		
Balance from previous fiscal year		3,343.73
Disbursed during the fiscal year	$2,187.72	
Carried to the surplus fund	660.92	
		2,848.64
Balance June 30, 1893		495.09
Artificial limbs, 1892:		
Balance from previous fiscal year		81,177.39
Disbursed during the year		54,404.19
Balance June 30, 1893		26,773.20
Artificial limbs, 1893:		
Appropriated by act of August 5, 1892		175,000.00
Disbursed during the year		135,761.53
Balance June 30, 1893		39,238.47
Appliances for disabled soldiers, 1891:		
Balance from previous fiscal year		58.61
Carried to the surplus fund		58.61
Appliances for disabled soldiers, 1892:		
Balance from previous fiscal year		95.90
Disbursed during the year		67.50
Balance June 30, 1893		28.40
Appliances for disabled soldiers, 1893:		
Appropriated by act of August 5, 1892		2,000.00
Disbursed during the year		1,754.83
Balance June 30, 1893		245.17
Expended in furnishing trusses to disabled soldiers under the Revised Statutes, sections 1176 to 1178, and act of March 3, 1879		10,926.78
Support and medical treatment of destitute patients in the city of Washington:		
Appropriated by act of August 5, 1892		19,000
Disbursed during the year		19,0

There were furnished to disabled soldiers, seamen and marines during the year ending June 30, 1893:

Trusses	1,494
Special appliances	230
Artificial legs furnished in kind	15
Artificial arm furnished in kind	1
Artificial hand furnished in kind	1
Apparatus for arm furnished in kind	1
Limbs and apparatus commuted	2,688

ARMY MEDICAL MUSEUM.

The total number of specimens received during the fiscal year was 1,038; total number of specimens in the Museum June 30, 1893, 32,265. The following statement shows the details of additions, transfers, etc., in the different sections:

Pathological Section:

In Museum June 30, 1892	10,305
Exchanged during the year	1
	10,304
Transferred from Provisional Pathological Section during the year	1
Received during the year	208
In Museum June 30, 1893	10,513

Anatomical Section:

In Museum June 30, 1892	3,411
Received during the year	41
In Museum June 30, 1893	3,452

Section of Comparative Anatomy:

In Museum June 30, 1892	1,717
Received during the year	0
In Museum June 30, 1893	1,717

Microscopical Section:

In Museum June 30, 1892	12,270
Received during the year	500
In Museum June 30, 1893	12,770

Miscellaneous Section:

In Museum June 30, 1892	1,524
Received during the year	116
In Museum June 30, 1893	1,640

Provisional Pathological Section:

In Museum June 30, 1892	1,274
Transferred to Pathological Section during the year	1
	1,273
Received during the year	140
In Museum June 30, 1893	1,413

Provisional Anatomical Section:

In Museum June 30, 1892	727
Received during the year	33
In Museum June 30, 1893	760

RECAPITULATION.

Total number of specimens in Museum June 30, 1892	31,228
Exchanged during the year	1
	31,227
Total number received during the year	1,038
Total number in Museum June 30, 1893	32,265

The following are some of the more interesting specimens added to the Museum collection during the fiscal year ending June 30, 1893:

(1) A series of embryos, human and comparative, normal and monstrous. Presented by Dr. F. H. Day, Wauwatosa, Wis.

(2) Monstrous human fœtus, a peromelus, with several accessory spleens, several cysts in the mesentery and the kidneys hypertrophied nearly to adult size. Presented by Dr. T. A. R. Keech, Washington, D. C.

(3) An extra-uterine fœtation at two months. Death from rupture and hemorrhage. Presented by Dr. T. C. Smith, Washington, D. C.

(4) An extra-uterine fœtation at about fourteen days. Death from rupture and hemorrhage. Presented by Dr. D. S. Lamb, Washington, D. C.

(5) Extra-uterine fœtation at five months, removed by laparotomy. Recovery. Presented by Dr. I. S. Stone, Washington, D. C.

(6) Extra-uterine fœtation at term, removed by laparotomy. Recovery. Presented by Dr. J. Tabor Johnson, Washington, D. C.

(7) A series of parasites of the horse, pig, ox, and sheep. Received in exchange from Dr. C. W. Stiles, Bureau of Animal Industry, U. S. Department of Agriculture.

(8) Sternum, showing eight cartilages on left side. From a white woman, aged 30, who was left-handed. Presented by Dr. D. S. Lamb, of Washington, D. C.

(9) Heart showing punctured wound, followed by abscess of interventricular septum which ruptured into the left ventricle. Presented by Assistant Surgeon A. B. Heyl, U. S. Army.

(10) Specimen of chronic pericarditis with chalky plates. Presented by Lieut. Col. W. H. Forwood, Deputy Surgeon-General, U. S. Army.

(11) Portions of brain from a case of an abscess of brain following a fall. On the supervention of convulsions with paralysis trephining was performed and the abscess emptied. The patient recovered (Medical News, Philadelphia, 1887, Vol. LI, p. 675). Presented by Dr. L. D. Wilson, Wheeling, W. Va.

(12) Three specimens showing cancer of brain and dura mater. Presented by Dr. W. P. Carr, Washington, D. C.

(13) Specimen showing congenital absence of vermiform appendix. From a soldier. Presented by Lieut. Col. W. H. Forwood, Deputy Surgeon-General, U. S. Army.

(14) Liver showing congenital syphilitic cirrhosis. From a white boy, aged 16 years. Presented by Dr. C. G. Stone, Washington, D. C.

(15) Specimen of primary cancer of the gall-bladder. From a mulatto, aged 55 years. Presented by Dr. Thomas Martin, Washington, D. C.

(16) Specimen showing congenital absence of ovaries. From a mulatto woman, aged about 50 years; married, but without children. Presented by Dr. D. S. Lamb, Washington, D. C.

(17) A series of thirteen models showing various diseases of the skin and subcutaneous tissue. Made by J. Baretta, Paris, France. Purchased.

(18) Papier-maché model, six times enlarged, of the bones of the base of the skull and the face. Made by J. H. Emerton, Boston. Purchased.

(19) Model of the eye, orbit, and adjacent parts. Made by Dr. August Müller, Berlin. Purchased.

(20) A series of skeletons and crania of natives of New Britain and the Samoan Islands. Purchased.

(21) Transport or pack saddle used by the medical department of the British army in India. Presented by Dr. Robert Harvey, principal medical officer, Punjab frontier force, Peshawar, India.

The Museum is represented at the World's Columbian Exposition at Chicago by a display of specimens, including models of hospitals, of a railway train for transportation of wounded, and of hospital steamers; also a series of pathological specimens illustrating tuberculosis and tumors, a series of ninety sections of human embryos, a series of three hundred and forty-six photomicrographs, and a series of microscopes, illustrating the history of the instrument, with other apparatus.

The Army Medical Museum has been visited during the fiscal year ending June 30, 1893, by 85,000 persons.

LIBRARY OF THE SURGEON-GENERAL'S OFFICE.

The following table shows the additions made to the library during the fiscal year.

Description.	On hand June 30, 1892.	Added during fiscal year.	Total June 30, 1893.
Medical journals	31,212	1,003	32,215
Medical transactions	4,504	195	4,699
Bound theses	1,663		1,663
Bound pamphlets	2,073	185	2,258
Other medical books	67,748	2,070	69,818
Total	107,200	3,453	110,653
Medical theses	52,119	1,844	53,963
Medical pamphlets	*112,564	6,573	119,137
Total	164,683	8,417	173,100

*Of the total number of single pamphlets on hand June 30, 1892, there were bound during the year 630 in 128 volumes.

There were presented to the library during the year 633 books and 7,981 pamphlets and journals.

Volume XIV of the Index Catalogue, including from "Sutures" to "Universally," forming a volume of 1,016 pages, has been completed and is now in the printer's hands. The edition will be distributed as soon as bound to those institutions and persons who have received the previous volumes. The preparation of the manuscript of volume XV is already well advanced.

PROVIDENCE HOSPITAL.

Under the provisions of the act of August 5, 1892, making appropriation of $19,000 "for the support and medical treatment of ninety-five medical and surgical patients who are destitute in the city of Washington, under a contract to be made with the Providence Hospital by the Surgeon-General of the Army," a contract was duly entered into with the institution named, and has been fulfilled to my satisfaction and without complaint on the part of the persons sent there for treatment. The following is a statement of the amount of relief afforded under the appropriation:

Number of patients in hospital July 1, 1892	95
Number of patients admitted during the year	933
Total number of patients treated	1,028
Average number of patients admitted per month	78
Number remaining in hospital June 30, 1893	94
Total number of days' treatment afforded	37,904
Average number of days' treatment per patient	37
Average number of patients treated per day	104
Longest term of treatment (days)	365
Shortest term of treatment (days)	1
Number of patients in hospital during the whole year	36

The patients included in the statement represent all classes of diseases, acute and chronic, except those of a contagious nature. The patients shown as having remained in hospital during the whole year are incurable, without home or friends.

ARMY AND NAVY GENERAL HOSPITAL.

The capacity of the hospital is 16 beds for officers and 64 for enlisted men; total 80. The officers' division is closed in July, August and September, but during the autumn, winter and early spring there is difficulty in accommodating the applicants. This may be overcome in part by a regulation recently issued by the War Department limiting the authority to enter to two weeks; that is, the permission is void after two weeks' delay. Thirty officers were treated during the last fiscal year, of whom 19 were Army officers on the active list; of these 1 was transferred to the Government Hospital for the Insane, 4 have been recommended by boards for retirement, and the remainder are believed to be on duty in varying degrees of health. There were three Navy officers, none of whom recovered their health. One officer of the Revenue Marine became quite well. The other officers were on the retired list of the Army and Navy.

Of the enlisted men there were taken into the hospital from other posts 75 soldiers, and 15 were present on the beginning of the year. Of these 90 cases, 69 were terminated, 3 by death, 19 by discharge for disability, 2 by discharge by purchase, 4 were transferred to their stations not improved, 1 deserted, and 40, or 58 per cent, were returned to duty. Of 40 completed cases of articular and muscular rheumatism 25, or more than 60 per cent, were returned to duty. Of those discharged for disability, the ability of more than 68 per cent to support themselves by manual labor was estimated at one-half or more. The subsequent histories of 41 cases returned to duty in the calendar year 1892 show that six months after they left the hospital 32, or 78 per cent, were doing duty.

The admission of men to the general hospital was much simplified by a general order issued in September, 1892, apportioning the beds for enlisted men among the military departments, and authorizing department commanders to send men directly to the hospital; and it was hoped that more soldiers would be enabled to take advantage of it. This, however, has not been the case; the number of admissions has not materially altered. Three times as many cases could be treated in the course of the year as are received. The average residence in hospital of the men returned to duty was 105 days and of those discharged for disability 104 days.

Besides the usual allowance of $600 for the minor repairs of the hospital there was an allowance of $972.77 for repairs to the bath house, which has been replastered and repainted within. There was also a special appropriation for the improvement of the grounds of $7,960.60. This is being expended in walls, fences, roads, drainage, a flagstaff, and other permanent improvements outside of the hospital buildings.

The commanding officer recommends that electric light be introduced in place of gas, and that increased accommodations be provided for officers, in both of which recommendations I fully concur.

MEDICAL OFFICERS.

The requirements of the Army, as regards medical officers during the past year, have been as follows:

Number of permanent posts and stations	91
Number of temporary posts and substations	11
Total	102

There were 76 medical officers reported to this office as having been on duty with scouting parties and other field service during the year.

Army medical examining boards were convened in New York City, N. Y., October 3, 1892, and March 27, 1893, and remained in session one month each, for the examination of candidates.

The following is a recapitulation of the work performed by the boards during their sessions:

Candidates invited to appear for examination	54
Candidates found qualified	12
Candidates rejected, professionally	20
Candidates rejected for physical disability	7
Candidates who withdrew after partial examination	4
Total examined	43
Candidates who failed to appear for examination	11

Deaths.—One deputy surgeon-general, with the rank of lieutenant-colonel; 1 surgeon, with the rank of major.

Retirements.—One surgeon-general, with the rank of brigadier-general; 1 assistant surgeon-general, with the rank of colonel; 1 assistant surgeon, with the rank of captain (Capt. James A. Finley, act of February 8, 1893).

Promotions.—One deputy surgeon-general, with the rank of lieutenant-colonel, to be assistant surgeon-general, with the rank of colonel; 3 surgeons, with the rank of major, to be deputy surgeons-general with the rank of lieutenant-colonel; 2 assistant surgeons, with the rank of captain, to be surgeons with the rank of major; 4 assistant surgeons, with the rank of first lieutenant, to be assistant surgeons with the rank of captain.

Appointments.—One deputy surgeon-general, with the rank of lieutenant-colonel, to be surgeon-general with the rank of brigadier-general: James A. Finley, late captain and assistant surgeon, to be assistant surgeon with the rank of captain, February 13, 1893, with rank from November 10, 1879 (act of February 9, 1893); twelve assistant surgeons, with the rank of first lieutenant.

Resigned.—One assistant surgeon with the rank of captain; 1 assistant surgeon with the rank of first lieutenant.

Commission vacated by new appointment.—One deputy surgeon-general with the rank of lieutenant-colonel.

Vacancies.—There are now 5 vacancies in the Medical Department.

The establishment of an Army Medical School in the city of Washington, D. C., was authorized by General Orders No. 51, Adjutant-General's Office, June 24, 1893, for the purpose of instructing approved candidates for admission to the Medical Corps of the Army in their duties as medical officers. The course of instruction at this school will extend over four months and will be given annually beginning on the first day of November. The faculty will consist of a president, who will be responsible for the discipline of the school and will deliver a course of lectures on the duties of medical officers in war and peace; a professor of military surgery, including the care and transportation of wounded; a professor of military hygiene, including practical instruction in the examination of water, air, food, and clothing from the sanitary point of view, and a professor of clinical and sanitary microscopy, including bacteriology and urinology. The professors will be selected from among the senior medical officers of the Army stationed in or near the city of Washington. In like manner will be selected as many associate professors as may be required to give practical laboratory instruction in the methods of sanitary analysis, microscopical technique, clinical microscopy, bacteriology, etc.

The next Army Medical Examining Board will be convened in Washington, D. C., and as its membership will include members of the faculty of the Army Medical School, the qualifications of approved candidates will be known satisfactorily to those who will be required to undertake their further instruction. Although there is no need to teach medicine or surgery to well-educated graduates of our medical colleges there are certain duties pertaining to the position of an army medical officer for which the college course of these young men has not prepared them; and certain of these duties are more important than the clinical treatment of individual cases of disease and injury because the efficiency of a command, of an army even, may depend upon their proper performance. During the past twenty years the prevention ot disease has made infinitely greater progress than its cure. Recognizing this fact health officers have been appointed and health boards organized by civil communities for their own protection. A special education is needful to prepare a medical man to undertake the responsibility of protecting the public health. The army medical officer is the health officer of his command; but the young graduate seldom is equipped with the knowledge or experience necessary to efficient action in this position. The course at the Army Medical School will prepare him to cope with the questions of practical sanitation that will be presented to him at every turn in his military career; questions of site and soils and buildings; of ventilation, heating, and occupancy; of drainage, sewerage, and disposal of garbage; of the wholesomeness of water supplies, and of the various articles of food in the contractor's herd, the slaughterhouse, the subsistence storerooms, the kitchen or mess hall; of the practical value of disinfectants, the bacteria which they destroy and the ptomaines which these elaborate—all bearing upon the preservation of the health of the military community under his sanitary care.

The stationing of one of the companies of instruction of the Hospital Corps at Washington Barracks, recently authorized, will be of value in connection with the work of the Medical School. (See page 17.)

HOSPITAL CORPS.

The authority of the Secretary of War, given in General Orders No. 25, 1892, to enlist from civil life into the Hospital Corps, and the act approved July 13, 1892, raising the pay of hospital-corps privates from $13 to $18 per month, have greatly benefited the Corps by enlarging the sphere of selection and offering better inducements to good men to enter its ranks.

There were in service June 30, 1893, 122 hospital stewards, 79 acting hospital stewards, and 585 privates, 58 of the last serving with the companies of instruction. and 527 on duty with troops and at military stations.

Taking into consideration the number of garrisoned posts, the requirements of camps more or less permanent, field service, and independent commands, the force of the Hospital Corps under Army Regulations would be: Hospital stewards, 146; acting hospital stewards, 87, and privates, 592. The estimate submitted for the year ending June 30, 1894, for the support of the Corps was $225,000; but the sum of $215,000 only was appropriated. It is expected, however, that with proper restrictions as to the wants of the service and the enforcement of due economy in the administration of the military hospitals, the appropriation will not be exceeded.

The loss of membership for the year was 257. Twelve of these were due to retirements; 16 were occasioned by desertion. The percentage of desertion, 2.1, is less than one-half of that in the Army as a whole. The gain for the year was 232.

Fifteen acting hospital stewards were promoted to stewardships during the year, after having served one year as acting stewards and passed a satisfactory examination in accordance with the requirements of section 4 of the act of March 1, 1887, organizing the corps. Of 42 men who came up for examination for the position of acting hospital steward 30 passed and 12 failed.

At the present time it is needless to advance arguments in favor of an organization which is recognized as essential in all modern armies, nor is it necessary to contend that such an organization must in all particulars be a military one. It would seem therefore that no more important duty now attaches to the Medical Department of the Army than the proper training of the men of the Hospital Corps and the perfecting of its organization. The company of instruction having passed the experimental stage a bill was introduced into Congress at its last session looking to a legalizing of such organizations and the placing of them on a definite basis. This bill passed the House of Representatives without question, but while in the Senate committee was attacked from the outside on the ground that it contained the possibility of command by medical officers over other troops than the men of the Hospital Corps, and was amended by the introduction of a clause covering this point. As amended the bill passed the Senate, but it did not reach the House until the closing hours of the session, when in the press of business no opportunity was obtained of bringing it up for action.

A comparison of the men trained in the companies of instruction with the members of a detachment locally selected and instructed is occasionally to the disadvantage of the former, as might be expected from differences in the ability and capacity of individuals; but the general testimony is to the superiority of the school-instructed men over the ordinary hospital-corps private, and no one who has seen the work of the companies as units can question the certain superiority of bodies of men so trained over any organization locally gathered and individually instructed. The following report from Maj. V. Havard shows the character of the instruction given to the companies:

> The course of instruction comprises infantry drill through the school of the company (including the manual of arms). Special attention is given to the military training of civilians enlisting directly into the hospital corps, and with gratifying results. The experiment of having such men drilled with one of the regimental companies, to which they were assigned for the purpose proved a failure. All their instruction, military as well as technical, should and can be received in the Hospital Corps company.
>
> The theoretical instruction, imparted by recitations, lectures, and demonstrations, embraces the following branches:
>
> Elementary anatomy and physiology; minor surgery; first aid; surgical instruments, bandaging and dressings; rudiments of materia medica and pharmacy; nature and symptoms of ordinary diseases; nursing, including a knowledge of antiseptics and disinfectants; poisoning; cooking.
>
> The practical instruction embraces the following:
>
> 1. Bearer drill, covering the whole official manual.
>
> 2. First aid, including the application of dressings and bandages, according to the nature and location of injuries as indicated on tags fastened to the dummy wounded.
>
> 3. Nursing. Three men are on duty in each of the two hospital wards, designated as wardmaster, nurse, and assistant nurse; the wardmaster is selected for his knowledge, experience, and aptitude to instruct; the nurse and assistant nurse are changed

every two weeks and are not excused from attending recitations and drills; they are specially taught the use of the clinical thermometer, the dressing of wounds, and the care of the sick.

4. Pitching and striking tents; use of the medical saddle in packing and unpacking field chests and miscellaneous articles. As it has been impossible to obtain horses for the use of ambulances and the mounting of noncommissioned officers, the care of horses and driving are not taught systematically. Pack mules for instruction are available from the large pack train at the post.

5. Cooking. Men showing aptitude in that direction are detailed as assistant cooks and retained as such until qualified. The allotment made for the purchase of food material will render possible a course of practical instruction for all the members of the company.

The daily course of instruction, theoretical and practical, is as follows, and has been substantially the same during the past year:

A. M.— 9 to 9:45 military drill.
10 to 11 lecture and recitation.
P. M.— 1:15 to 2 instruments, bandaging, and dressings.
2:15 to 3 bearer drill and field work.
3:15 to 3:45 additional lecture and recitation for the second section.
3:45 to 4:30 special lecture and recitation in pharmacy, etc., for acting stewards and more advanced men (only twice a week).

It would be desirable that the men instructed here could come together at the same time twice a year, forming two classes each year; the scheme of instruction would be simplified and give still better results. Under present and perhaps unaoidable conditions, with men transferred in and out at all times throughout the ear, it was found necessary to have a second section in which the new men received dditional instruction. On the other hand the more advanced men, those showing special aptitude, and who aspire to become stewards, receive special practical instruction in the dispensary.

The results obtained during the year have been gratifying and seem to justify the trouble and expense incurred. The quality of the men received at the school has sensibly improved and is now very good. Men with objectionable habits or not sufficiently intelligent to learn and discharge the duties of a sanitary soldier still find their way in, and it may be impossible to entirely exclude them. One chronic drunkard was summarily discharged during the year. There has been no desertion from the school.

Concerning transfers from the line into the Hospital Corps, I would respectfully suggest that no recommendation for such transfers be made except in favor of such men as have been tried as company bearers and thus brought under the personal observation of the medical officer making the recommendation.

The men directly enlisted from civil life, especially during the past year, have very generally become good and efficient members of the Hospital Corps, and the wisdom of the regulation permitting such enlistment seems justified.

The companies of instruction are now stationed at Forts Riley and D. A. Russell. The object of establishing them at these posts was apparently to have the men aggregated at central points, so as to minimize transportation in sending them to their stations for duty at the close of their course of instruction. It appeared to me, however, that this would be better accomplished by having one of the companies in the East. A large percentage of our recruits is drawn from eastern cities, and many of the assignments of instructed men are necessarily also to posts on the Atlantic seaboard. As sending men to the West for instruction and bringing them back for duty involved unnecessary expense, it seemed better to have one of the companies stationed in the East, the other remaining in the West for the supply of instructed men to western stations. Of the eastern posts, Washington Barracks, as being centrally situated, appeared to be a suitable location. Moreover, one of the companies, if stationed at the barracks in this city, could be used to advantage in connection with the Army Medical School, affording full opportunity to passed candidates for position in the medical department to become acquainted with the methods of company administration, drill regulations, and other duties in connection with troops. These views, on being presented to the major-general commanding, met with his approval, and authority was given to organize a company at Washington Barracks and to correspondingly reduce that at Fort D. A. Russell.

To ascertain the views of medical officers on existing methods in the management of the Hospital Corps, reports were called for on the results of competitive examination as affecting promotion to noncommissioned positions, on the value of lectures and drills as bearing on first aid in the field, on the suitability of personal and sanitary equipments, and on the discipline of the corps.

As to selection by competitive examination, orally by a board of examiners at the station of the candidate, and by written questions issued from this office, most of our medical officers agree that the system has had a marked effect in elevating the standard of proficiency, bringing the intelligent, able, and ambitious men to the front, and giving to the corps as its noncommissioned officers its most efficient and capable members. The system, however, does not escape criticism. The most important point raised is, that in proportion as we have gained in intellectual ability we have lost in physique and in military efficiency, or the ability to control men and preserve discipline in a hospital; and there appears to be good ground, in certain instances for this criticism. The remedy for this lies in the hands of the very officers who make the criticism. No man is authorized to appear for examination unless his request has been approved by the medical officer of his post. No medical officer should recommend for promotion a man who is by temperament disqualified from performing one of the most important duties of the hospital steward, that ot controlling his men and managing a hospital. This should be a *sine qua non* to appointment.

Two of the reports, both based probably on the same individual instance as both came from posts in the same locality, claim that our present methods admit occasionally "brilliant men of objectionable character," or, as the second report phrases it, "intellectual superiority with deficient moral quality has occasionally outclassed good sterling qualities." In such cases also the fault is dependent not on the method but on the carelessness with which medical officers have certified to the qualifications of intending candidates.

The mass of the testimony is to the effect that as the result of lectures and drills the men of the Hospital Corps have been improved greatly in their ability to render first aid and coöperate with each other in caring for the sick and wounded. This has been demonstrated on various occasions while on active service in the field. The preponderance of opinion is that greater benefit has been derived from drills, which are practical object lessons, than from lectures. Only the men ambitious of promotion have profited by lectures.

The company bearers as a rule have taken but little interest in either the drills or lectures; their attendance has been irregular and the teaching comparatively profitless. It is evident that better results will be attained in the case of the company bearers by restricting their instruction to drills in the management of the litter and wounded man, and in the practical essentials of first aid. It is to be observed, however, that many company and commanding officers look with disfavor upon the instruction given to the company bearers, and much variation is found in the compliance with Army Regulation 1575, the spirit, if not the letter in occasional instances, not being complied with. In fact this regulation is not so definite but that obedience to it may or may not be practiced, according to the construction placed upon it by commanding officers. Some seem to construe the clause "this special instruction shall not relieve them from the performance of all their regular military duties" as authorizing them to supersede this particular duty by any other whatever, instead of so fixing the hours for other military duties that they should not interfere with the designated hour for instruction. If post commanders would see to it that on the four hours monthly specified by them all of the company bearers, or as many of them as possible, should report to the medical officer for instruction, the result of the instruction would be of much greater value to the command in the event of some future emergency.

From the reports of medical officers on the subject, it appears to be the general opinion that white linen or cotton duck, worn over the fatigue uniform in cold weather and alone in hot climates, is the most suitable wear for men occupied in ward or dispensary duties. I therefore renew the recommendation made in the last annual report of the Surgeon-General that white linen blouses and pantaloons be issued for the use of the Hospital Corps, as these are less absorbent than the regulation articles of clothing. In case of infectious diseases they would show stains more readily and could be immersed in disinfecting solution without injury to their texture.

A satisfactory equipment for the corps is a matter of some difficulty, as its members may be sent on field service at one time with an infantry, at another with a cavalry command. For some time past much difficulty has been experienced in obtaining mounts for these men when ordered to active service in the field, although Army Regulation 1588, as amended by General Order 97, of 1891, prescribes that they shall be mounted, and directs that the Quartermaster's Department shall provide the necessary horses, and the Army appropriation bill, approved July 16, 1892, appropriated money for this purpose. During the past year an application from a post surgeon for mounts for his men elicited the remark from the post quartermaster that all horses in his department were condemned cavalry horses, already advertised to be sold at public auction, and from the chief quartermaster of the department that mules constituted the only mount he was able to furnish. This communication, referred to the Quartermaster-General, brought out the suggestion that when supernumerary horses are available at a post, either in cavalry troops or in the Quartermaster's Department, they should be furnished for the use of members of the hospital corps for duty in the field when called for, and that when no horses are available special application should be made for authority to hire. This was approved by the major-general commanding, and it is expected that hereafter post surgeons will experience no difficulty in having provided for them horses needful to mount their men in accordance with Army Regulations.

RECRUITING.

The number of applicants for enlistment and reënlistment during the year was 25,012; white, 22,692; colored, 2,107; and Indian, 213. Of the white applicants 8,259, or 36.4 per cent, were accepted, 13,662, or 60.2 per cent, were rejected, while 771, or 3.4 per cent, declined enlistment after examination. Of the colored men 807, or 38.3 per cent, were accepted, 1,227, or 58.2 per cent, were rejected, while 73, or 3.5 per cent, declined. Of the Indians 92.5 per cent, were accepted, 7 per cent, rejected, and 0.5 per cent, declined.

In addition to those enumerated above 179 Indians applied for enlistment as scouts, of whom 177 were accepted and 2 rejected.

Causes of rejection.—Of the 25,012 men examined 14,904, or 59.59 per cent, were rejected on the primary examination, the rejection being recorded in one-fifth of this number, or 11 per cent of the total number examined, as due to general unfitness or unclassified causes. Of the classified causes diseases of the eye were most prolific of rejection, having been found to a disabling extent in 8.5 per cent of the applicants. Developmental diseases caused the rejection of 4.4 per cent; diseases of the genito-urinary organs 3.9; minority or under the minimum age 3.8; diseases of the digestive system 3.3; excess of height, weight, or obesity 0.5; under height, weight, or size 5.9; imperfect knowledge of English 2.2; illiteracy only, 0.08; moral character, bad or doubtful, 1.9. Venereal diseases caused relatively more rejections among the colored men; alcoholism more among the whites. The percentage of illiteracy was 0.079 among the white, 0.142 among the colored men. Diseases of the eye were also more disabling among the whites, 8.8 per cent as compared with 6.4. Venereal diseases and diseases of the respiratory organs were the prominent causes among the small number of Indians examined.

Physique of accepted recruits and reënlisted men. Age.—Of 9,585 recruits accepted on primary examination—white 8,555, colored 833, Indian 197—567 men were under 20 years of age, 4,880 from 20 to 24 years, 2,527 from 25 to 29, 790 from 30 to 34, 348 from 35 to 39, 424 from 40 to 49, and 49 over 50 years. The average age of these recruits was 25.39 years.

Height.—The average height of those under 20 years was 67.16 inches; of those from 20 to 24 years, 67.53 inches; of those from 25 to 30 years, 67.41 inches; the average height of those enlisted in each of the years of the last two periods differing from the average of the period by only one-tenth of an inch. Beyond the age of 30 years the average height became somewhat reduced. The average height of the whole number examined was 67.43 inches, the Indian being a little more than an inch taller than the colored man and a little less than an inch taller than the white man.

Weight.—The average weight was found to increase with age from 129.25 pounds among the boys of 16 to 152.94 among reënlisted soldiers over 50 years of age. The average of the whole number was 145.35 pounds, the colored man being 3 pounds heavier than the white and 2 pounds heavier than the Indian.

The size of the chest also increased in proportion to age, from 32.89 inches at expiration among those under 20 years to 35.15 inches among those over 50, and from 35.74 to 37.62, respectively, at full inspiration; but there was little variation in the expansibility from the average of 2.86 inches. The white man had the largest chest, but the Indian, with the smallest measurements, had the greatest expansibility, 3.12 inches.

The average age of the men accepted for service during the year was 25.39 years; height, 67.43 inches; weight, 145.35 pounds; measurement of chest at expiration, 34.16 inches; at inspiration, 37.02 inches; expansibility of chest, 2.86 inches.

Of the white men the average height was 67.42 inches; weight, 145.07 pounds; chest measurements, 34.17 and 37.06 inches.

Of the colored men: Height, 67.26 inches; weight, 148.08 pounds; and chest measurements, 34.12 and 36.70 inches.

Of the Indians: Height, 68.30 inches; weight, 146.04 pounds; chest measurements, 33.64 and 36.80 inches.

Anthropometric students will find the details of these measurements in Table XXV.

Nativity.—Of every hundred of these recruits 68.3 were native Americans: White, 57.6; colored, 8.6; Indian, 2.1. Of the foreign-born recruits 9.4 came from Ireland, 9.2 from Germany, 3.1 from England, 2.2 from Canada, 1.6 from Sweden, 1.0 from Denmark.

Fuller details of the nativities, given in Table XXIV, may be compared with those of the men in service, as stated on page 67.

Occupation prior to enlistment.—About two hundred different callings or occupations were recorded on the enlistment papers by the recruits accepted during the year. It is therefore impossible to indicate in brief the results of an inquiry into this subject except by stating the number of men furnished by occupations, which are most prominent in this regard. Of the 9,585 men 2,240 placed themselves on record as laborers, and 13 of these were Indians; 2,052 as soldiers, but no Indian so reported himself; 1,188 as farmers. After these three classes there is a drop in the numbers to 377, who defined their occupation by the term clerk; but in addition to these there were 52 bookkeepers, 7 stenographers, 3 hotel clerks, 2 typewriters and 1 shipping clerk. There were 376 teamsters, drivers, and coachmen, with 92 hostlers and grooms, 16 farriers (not included among 96 blacksmiths), 2 horsemen, 3 horse-trainers, 2 liverymen, 2 jockeys, 1 riding teacher, and 1 an Indian horse-raiser. Musicians enlisted to the number of 214, with 1 music teacher and 2 piano tuners; carpenters, 204; painters, 186; cooks, 108; machinists. 106; butchers, 104; printers, 95; and bakers, 91. Eighty-six had no stated occupation, but 78 of these were Indians and only 8 white men. Eighty-six also were tailors, 77 miners, 76 barbers, 75 engineers, 74 shoemakers, and 69 sailors. The professional and commercial ranks furnished 1 physician, 7 lawyers, 3 dentists, 2 chemists, 39 druggists (mostly enlisted for the hospital corps), 6 newspaper men, 8 civil engineers and surveyors, 2 actors, 2 artists, 4 draftsmen, 62 school-teachers, 26 students and schoolboys, 39 salesmen, 13 photographers, etc. See Table XXVI.

IDENTIFICATION OF DESERTERS.

The method of identifying deserters and other undesirable men who present themselves for enlistment has been in efficient operation since 1890. The first case of identity was reported July 19 of that year. Since then there has been a total of 432 identifications reported to the Adjutant-General of the Army, with, in addition, 13 cases of probable identity or suspicious similarity in which further investigation failed to develop sufficient confirmatory evidence to warrant a continuance of the inquiry.

Of the 432 identifications 306 were effected while the men were in service, 113 having been identified as deserters, 105 as convicts, and 88 as cases of fraudulent enlistment. The remaining 126 cases were identified after the termination of their enlistment, as the result of comparing their outline figure cards with their description on the form of examination of a recruit in use prior to the establishment of the card system: 90 of the men in these cases were deserters, 16 convicts, and 20 cases of fraudulent enlistment of other kinds.

HEALTH OF THE ARMY.

During the past year the health of the Army has been excellent. Perhaps at no time heretofore has the Surgeon-General been able to invite attention to a better record of health and consequent efficiency, and this although some of the rates have been materially increased by an undue proportion of sickness among the Indian companies.

The admission rate per thousand of strength was 1270.42, as compared with 1364.78 during the previous year and 1459.65 during the preceding decade. The lowest recorded admission rate, 1247 in 1887, is practically the same as that now reported. The number and duration of the cases were equivalent to a noneffective rate of 39.60, as compared with 42.01 during the previous year and 43.41 during the preceding decade. The nonefficiency may be expressed also by the statement that each officer and man of the Army was, on an average, sick for 14.5 days during the year, as compared with 15.3 and 15.9 days, respectively, during the previous year and each of the years of the previous decade. The number of men discharged for disability was 18.35 per thousand of strength, as against 17.23 (the lowest annual rate to which these discharges have been brought) in the previous year and 30.70 the average of the ten years preceding. The death rate from all causes was 6.44, comparing favorably with 8.05 and 8.75, respectively, for the previous periods already mentioned, as well as with 6.33 for the year 1889, the lowest annual death rate hitherto reported. Excluding deaths from injury the deaths from disease were equivalent to a rate of 4.36 per thousand of strength, as against 5.03 and 5.81, respectively, for the previous year and decade and against 3.95 for the year 1889.

In comparing our rates with those of foreign armies the admission rate is the only one which attracts attention by its magnitude; but this high rate does not indicate a greater prevalence of sickness among our men. It means simply that we take on sick report as a record of facts the cases of men who were excused from any part of their military duty on account of sickness or injury. The ailment may be so trivial—a few herpetic spots, for instance, on the lips of a bugler—that it would not be entered among the diseases affecting the command by medical officers of European services; but with us if the bugler is excused from sounding the calls on this account his case becomes a matter of record. It will be seen from a comparison of the other rates that notwithstanding the many trivial cases that form part of our record our noneflicient rate (39.60) compares favorably with that of the army of Austria-Hungary (43.58) and of the home service troops of Great Britain (44.29). The following tabulation gives a comparison of our rates with those of some of the armies of Europe, as obtained from their last published statistics:

Army.	Mean strength.	Ratio per 1,000 of mean strength.						Sick time to each soldier
		Admission.	Deaths.			Discharges.	Constantly noneffective.	
			Disease.	Injury.	Total.			
United States, 1892	24,203	1,270.42	4.36	2.08	6.44	18.35	39.60	14.5
United States, 1891	23,269	1,364.78	5.03	3.02	8.05	17.23	42.01	15.3
United States, 1881-'90	23,945	1,459.65	5.81	2.93	8.75	30.70	43.32	15.9
Great Britain (home), 1890	101,770	810.61	4.74	.79	5.53	16.72	44.29	16.2
Austria-Hungary, 1891	284,743	890.75	3.94	1.53	5.47	61.87	43.58	14.8
Italy, 1891	220,714	810.57	8.06	.90	8.96	14.27	35.86	13.1
Prussia, Saxony, Würtemberg, 1889-'90	418,913	897.20	2.32	1.00	3.32	17.43	31.36	11.5

The above statement of the English and German armies is exclusive of officers.

The Italian troops stationed in Africa had a mean strength of 2,603 men, with an admission rate of 1,175 and a death rate of 13.4, and are not included in the above table; 9,645 men of the Italian army were granted sick leaves for periods varying from three months to one year.

The high discharge rate of the Austrian army was explained in the report of the Surgeon-General for 1891, page 94.

In the German army 6,845 additional discharges (16.34 per 1,000 of mean strength) were made of recruits for disabilities contracted prior to conscription.

Injuries stand first in order of importance as causative of admissions to sick report in our Army, 252.74 of the total of 1270.42 per thousand of strength having been occasioned by violence. Diseases of the digestive system take second place with 173.74 cases per thousand of strength. The third place is taken by diseases of the respiratory organs (124.45), mostly cases of catarrh and bronchitis; the fourth place by diarrheal diseases (110.85), and the fifth by specific febrile diseases (98.50), which owe their prominence in this as in other armies at the present time to the continued, although lessening, prevalence of influenza. Following these come sixth, diseases of the integumentary system, mostly boils and abscesses (79.99); seventh, venereal diseases (76.73); eighth, rheumatism, articular and muscular (71.52), and ninth, malarial diseases (63.75). In the foreign armies tabulated above the five principal causes of admission were in each as follows: Austro-Hungary: First, integumentary; second, digestive; third, respiratory; fourth, injuries; and, fifth, venereal. Great Britain: First, venereal; second, digestive; third, injuries; fourth, specific febrile; and, fifth, respiratory. Italy: First, venereal; second, respiratory; third, digestive; fourth, specific febrile; and, fifth, integumentary. Germany: First, integumentary; second, injuries; third, digestive; fourth, specific febrile; and, fifth, respiratory. The gratifying point in these comparisons is the low grade of precedence taken in our service by venereal and integumentary diseases.

As causative of noneficiency, injuries take first place in the records of the past year, having occasioned 8.12 of the total of 39.60 constantly on the sick report per thousand of strength. Venereal diseases take second rank as a disabling cause, 5.33 men per thousand of strength having been constantly under treatment on their account. Specific febrile diseases, respiratory and digestive diseases, and rheumatism (including muscular) had each a noneffective rate of 3.3.

The absolute number of discharges for disability, which gave the rate of 18.35 per thousand of strength, was 493, of which 67 were for rheumatism and diseases of the bones and joints, 58 for injuries, 53 for consumption, 53 for venereal diseases, 44 for epilepsy and insanity, 44 for diseases of the heart and circulation, 27 for diseases of the eye, 14 of the ear, and 21 for hernia.

The absolute number of deaths was 173, of which 56 were caused by violence, 20 by consumption, 17 by pneumonia, 15 by diseases of the nervous system, 13 by typhoid fever, 13 by diseases of the heart, 8 by diseases of the kidney, 6 by influenza, and 3 by alcoholic poisoning.

The average strength of the Army, as shown by the returns of the Medical Department, was: White troops, 21,437; colored, 2,036; Indians, 730; a total of 24,203 men. There was little difference in the rates of admission for all diseases and injuries among these three classes of men, or in their noneffective rates. The former were: White, 1,273.45; colored, 1,257.86; Indian, 1,216.44; the latter 39.69, 38.55, and 39.97, respectively. Although these general rates varied but little, the admission rates for certain diseases differed considerably. Thus, malarial diseases were less frequent among the colored men and Indians than among the whites, the rates being, respectively, 26.03, 31.51, and 68.43. Alcoholism, also, 8.35, 1.37, and 41.19. Headache and neuralgia were equally common, but no case of insanity was developed among either the colored men or Indians, although a total of 49 cases was recorded among the white soldiers. Diseases of the heart were likewise infrequent among the colored men and Indians. On the other hand, the colored man appears during the year to have been relatively more subject to chronic rheumatism of the joints and the Indian to diseases of the eye. Dyspepsia, colic, constipation, and inflammations of the lymphatic system were considerably, and venereal diseases somewhat, more frequent among both than among the white troops. Consumption was unusually prevalent among the Indians. A total of 26 cases gave a rate of 35.62 per thousand of strength, as against rates of 3.27 and 4.42, respectively, among the white and the colored troops.

The death rate of the white troops from all causes was 6.11 per thousand of strength, of the colored troops 5.00, of the Indians 20.43; from disease the rates were, respectively, 4.23, 3.18, and 11.49; and from injury 1.88, 1.82, and 8.94. The rate from disease among the Indians was mainly due to the cases of consumption, and the large rate from injury to an undue proportion of gunshot wounds.

The rates of our colored troops during the past year are very satisfactory. Admission, noneffective, death, and discharge rates are all not only lower than in any previous year but lower than the corresponding rates for the same period among the white troops.

HEALTH OF THE MILITARY DEPARTMENTS.

The admission rate was highest, 1,515.50, in the Department of the East, but all the other rates found their maximum in the Department of Texas—death rate from disease, 7.43, from all causes, 11.48; discharge rate for disability, 27.68; rate of nonefficiency, 54.25. The latter department must therefore be credited with the least satisfactory record. The Department of the Columbia had the lowest admission rate, 772.73, noneffective rate, 27.88, and death rate from all causes, 3.67; but the Department of California had only 1.54 deaths from disease and the Department of the Platte 12.32 discharges for disability per thousand of strength present during the year.

The admission rate was considerably above the average of the Army, 1,270.42, in the Department of the East, 1,515.50; and of Texas, 1,460.51. It differed but little from the average in the departments of Dakota, the Missouri, and Arizona, while in the departments of the Platte, of California, and of the Columbia it was considerably less, respectively, 1,079.25, 953.07, and 772.73.

The noneffective rate of the Army, 39.60, was slightly exceeded by those of Dakota, Arizona, and the East, 40.29, 41.55, and 42.56, and very considerably by that of Texas, 54.25. This rate in the other departments was notably less: Columbia, 27.88, Platte, 31.74, California, 32.16, and Missouri, 35.84.

The death rate from all causes was highest in the Department of Texas, 11.48, and higher than the average of the Army, 6.44, in the departments of Arizona and of the East, 8.23, and 8.17, respectively. It varied but slightly from the average in the departments of the Platte, Missouri, and Dakota, 6.16, 5.74, and 5.57, and was considerably below the average in the departments of California and of the Columbia, 3.85 and 3.67, respectively.

The rate of discharge for disability, which for the Army was 18.35, differed by more than three units in none of the departments except those of Texas and Arizona on the one hand and the Platte on the other, which had, respectively, 27.68, 21.81, and 12.32.

When the figures indicating the influence of injuries, alcoholism, venereal diseases, and vaccina on the rates of sickness and mortality are dropped from the medical statistics of the various departments the comparative repute of the departments as just stated is not materially altered. Thus the Army is found to have an admission rate of 857.74, which is largely exceeded in the departments of the East and Texas, 1,027.39 and 1,023.64. The rates of the departments of the Missouri, Dakota, and Arizona do not differ materially from the average, while that of the Platte, 713.82; California, 563.08; and the Columbia, 486.08, are considerably smaller. The noneffective rate of the Army, 24.42, was slightly exceeded in the departments of Dakota, the East, and Arizona, 24.69, 25.51, and 26.80, and very considerably in Texas, 34.87. The rates in the departments of California, the Columbia, the Platte, and the Missouri were notably less, 17.23, 18.19, 18.73, and 21.70, respectively. The death rate was highest in Texas, 7.43, and higher than the Army average, 4.25; in the East, 5.45, and in Arizona, 5.76. It varied but little from the average in the Missouri, 3.35; Dakota, 3.71, and the Platte, 3.64, and was considerably below it in California, 1.54, and the Columbia, 2.94. The discharge rate, which for the Army was 14.18, was large in Texas, 20.92; small in the Platte, 8.96, and in the other departments lay between these extremes. Taking all the rates into consideration it would seem that during the year the Department of Texas had the worst record, and the Department of the Columbia decidedly the best.

DEPARTMENT OF THE EAST.

This department, with a mean strength of 6,613 men, had per thousand of strength present 1,515.59 admissions; 42.56 men constantly sick; 8.17 deaths, and 18.30 discharges for disability. The excess of admissions was due to no special epidemic, but to an increased prevalence of all diseases. Thus the specific febrile diseases, which include the cases of influenza, caused 116.89 admissions, as against 98.50 in the Army; diarrhea, 151.82, as against 110.85; venereal diseases, 99.65, as against 76.73; vaccina, 95.27, as against 45.45, and so on.

The posts which chiefly contributed to the excess of sickness in the department were the two recruiting depots, Columbus Barracks, Ohio, and Davids Island, N. Y., with Fort Hamilton, N. Y., and Washington Barracks, D. C. The depots had admission rates of 2,059.23 and 2,115.32, and noneffective rates of 71.98 and 46.31, respectively, while Fort Hamilton had 2,354.96 and 48.04, and Washington Barracks 1,981.93 and 43.22. Some of the large posts, as Fort Thomas, Ky., and Fort Wadsworth, and Willets Point, N. Y., had very fair records, and a few, such as Fort Columbus, N. Y., and Fort Warren, Mass., excellent records. The admission rate of Fort Columbus was 815.57, and its noneffective rate 38.31; the rates of Fort Warren were 608.70 and 22.14.

DEPARTMENT OF THE MISSOURI.

This department, with an average strength of 4,178 men, had an admission rate of 1,251.08, a noneflicient rate of 35.84, the death an discharge rates being 5.74 and 15.56. The admission rate in its totality was similar to that of the Army, but there were some differences in the prevalence of certain classes of disease. Thus influenza, malarial and integumentary diseases were relatively more frequent than in the Army as a whole, the first 90.24, as compared with 74.08; the second 119.67, as compared with 63.75, and the last 87.84 as compared with 79.99; but these excesses were offset by a relative diminution of several other classes, rheumatism giving a rate of only 52.18 instead of 71.52; diseases of the nervous system 39.73 instead of 49.29; of the respiratory system 112.73 instead of 124.45, and of the digestive system 164.91 instead of 173.74.

But for the post of Fort Reno the fair record of this department would have been much better than it is. This post had an admission rate of 1,917.72 and a noneffective rate of 67.57. Forts Sill and Sheridan had larger admission rates than the average, but the cases forming the excess were evidently of a trivial nature as the nonefficient rates were not correspondingly increased. The records of Forts Leavenworth and Riley were good, and those of the prison at the former post and of the cavalry recruiting depot at Jefferson Barracks were excellent.

DEPARTMENT OF DAKOTA.

Average strength, 3,233 men; admission rate, 1,276.83; nonefficient. 40.29; deaths, 5.57; discharges, 20.11. In this department, with rates similar to those of the Army, there was an excess of injuries, specific febrile diseases (mostly cases of influenza), and rheumatism, offset by a diminished prevalence of malarial and venereal diseases, alcoholism, and vaccina; injuries, 291.99 instead of 252.74; influenza, 118.16 instead of 74.08; and rheumatism, 86.30 instead of 71.52, with malarial reduced to 13.30 from 63.75; venereal, 54.12 from 76.72, alcoholism, 29.38 from 37.23. and vaccina, 25.36 from 45.45.

The highest rates were given by Fort Yates; admissions, 1,567.57. non-effective 64.98. Those of Forts Meade, Snelling, and Sully were somewhat over the average; that of Fort Keogh was fair, and of Fort Missoula excellent; admissions, 603.17; noneffectives, 20.64 per thousand of strength.

DEPARTMENT OF THE PLATTE.

Average strength, 3,571; admissions, 1,079.25; noneffectives, 31.74; deaths, 6.16; discharges, 12.32. In this department there was a notably lessened prevalence of all diseases and injuries except in the three instances of alcoholism, rheumatism, and tonsillitis, in each of which there was a slight increase.

The rates of Fort McKinney were considerably above those of the Army. Fort Robinson's excess of cases were of a trivial character. Forts Niobrara and Omaha had average rates; Fort Logan good, and Fort Washakie excellent, the last mentioned having had only 677.42 admissions and 20.27 noneffectives.

DEPARTMENT OF TEXAS.

Average strength, 1,481; admissions, 1,469.51; noneffectives, 54.25; deaths, 11.48; discharges, 27.68. Notwithstanding the relatively heavy rates of this department, it had a lessened incidence of disease under certain headings, as catarrh and bronchitis, 72.92 instead of 109.41;

tonsillitis, 19.58 instead of 41.90; rheumatism, 54.70 instead of 71.52; alcoholism, 28.36 instead of 37.23; and vaccina, 18.23 instead of 45.45; but the increased prevalence of all other diseases more than offset these advantages. The more important of the excesses were, specific febrile diseases, 126.94 instead of 98.50; malarial, 117.48 instead of 63.75; diarrheal, 158.67 instead of 108.03; venereal, 106.01 instead of 76.73; integumentary, 133.03 instead of 79.99, and injuries, 284.27 instead of 252.74. The increase in the rate of noneffieiency was mainly due to the cases of malarial fevers, which caused a constant sickness of 5.90 per thousand of strength, as compared with 1.76 in the Army; venereal, 8.01 as compared with 5.32; injuries, 10.66 as compared with 8.12, and specific febrile diseases, 5.26 as compared with 3.35.

The large rates of the department are owing chiefly to the prevalence of disease at Forts Sam Houston, Clark, and McIntosh. Fort Brown continues to preserve its excellent record: Admissions, 576.27; noneffectives, 36.91, more than 50 per cent of the latter relatively large rate having been due to injuries.

DEPARTMENT OF ARIZONA.

Average strength, 2,430; admissions, 1,251.44; noneffectives, 41.55; deaths, 8.23; discharges, 21.81. Injuries and diseases of the digestive organs were more prevalent than in the Army as a whole. Rheumatism was also more frequent, 109.82 as compared with 71.52, notwithstanding the hot and dry climate. It is to be observed, also, that notwithstanding the same hot and dry climate heatstroke was infrequent, 1.23 as compared with 2.77 in the Army, and notwithstanding the former repute, or, rather, disrepute, of the department as a hotbed of malaria, the admission rate for malarial diseases, 31.27, is only 59 per cent of that of the Army as a whole—63.75. Influenza was also less prevalent.

Most of the posts had rates which varied little from the average. Fort Marcy had the heaviest, 1,886.18 admissions and 56.53 noneffectives; Fort Huachuca the lightest, 899.37 admissions and 24.51 noneffectives.

DEPARTMENT OF CALIFORNIA.

Average strength, 1,300; admissions, 953.07; noneffectives, 32.16; deaths, 3.85; discharges, 16.15. Notwithstanding the low rates of this department it had a slight excess, over the average, of diseases of the eye, ear, and nervous system, and a marked excess of venereal cases, 91.54 instead of 76.73. The Presidio of San Francisco, at which one-third of the strength of the department is aggregated, had an excellent record for so large a post: Admissions, 1,034.41; noneffectives, 35.48. The rates at Benicia Barracks were low, 825.76 and 21.24.

DEPARTMENT OF THE COLUMBIA.

Average strength, 1,364; admissions, 772.73; noneffectives, 27.88; deaths, 3.67; discharges, 18.33. The admissions for disease in this department amounted only to 573.31 per thousand of strength as compared with 1,017.68 in the Army as a whole. The only disease which prevailed in excess of the Army rate was pneumonia, of which the absolute number of cases was 7.

Fort Canby is the only post which exceeded the average of the Army in its rates: Admissions, 1,292.45; noneffectives, 54.85. Vancouver Barracks and Forts Spokane and Sherman had excellent records.

HEALTH OF INDIVIDUAL POSTS.

One hundred and fourteen stations were garrisoned during the year, 39 by less than 100 men each, average 53; 29 by 100 to 200 men, average 141; 15 by 200 to 300 men, average 253; 16 by 300 to 400 men, average 353, and 15 by 400 to 700 men each, average 504. Some detachments were on duty in the field.

In former reports it has been noted that the prevalence of sickness was in a general way proportioned to the strength of the command, posts with a strength of over 200 men having had rates of admission and nonefficiency higher than the average and smaller posts having had rates correspondingly lower. This was explained on the assumption that at large posts men with trivial ailments were taken on sick report, while at smaller posts, where every available man was required to carry on the current work, the same ailment would be treated without a formal recognition of its existence. During the past year, however, this rule has not held good. While all the posts have lessened their rates, the largest posts (those with over 400 men) have been so successful in effecting this as to bring their sickness down to the average. The smaller posts continue below the average, but their low rates are offset by the posts garrisoned by 200 to 400 men. Whether the present low rates of the large posts is an accidental occurrence remains to be seen. They could with all due propriety be claimed as the result of the careful sanitary supervision that has been exercised in view of the possibility of invasion by cholera.

Fifteen posts, garrisoned by 400 to 700 men each.—Average strength, 504; aggregate strength, 7,561 men; admissions, 1,288.06; noneffectives, 39.73; deaths, 5.03; discharges, 17.46. The slight difference between these death and discharge rates and those of the Army are in favor of the posts.

Of the fifteen posts, those having the heaviest rates of admission are the recruiting depots at Columbus Barracks, Ohio, and Davids Island, N. Y. The third depot, at Jefferson Barracks, Mo., also included among the fifteen, stands in favorable contrast with the two others. Omitting for the present the consideration of these depots, there are twelve posts in this class, four of which have admission rates higher than the average of the Army and eight lower. The former are Forts Sam Houston, Tex., Meade, S. Dak., Sheridan, Ill. and Snelling, Minn., recording respectively 1,683.84, 1,556.90, 1,409.87, and 1,351.94. The latter begin with Fort Omaha, Nebr., 1,223.60, and including in order Fort Riley, Kans., Fort Assinniboine, Mont., Fort Leavenworth, Kans., the Presidio of San Francisco, Cal. and Fort Douglas, Utah, end with Fort D. A. Russell, Wyo., 766.90 and Vancouver Barracks, Wash., 727.27. The nonefficient rates at these posts correspond with the admission rates in their position above or below the average, except at Fort Sheridan, where the nonefficiency, 34.32, was lower than is ordinarily associated with an admission rate of over 1,400.

At Fort Sam Houston the excess of sickness was occasioned by diarrheal and integumentary diseases, injuries, influenza, malarial fevers and alcoholism. Although there were few cases of malarial fever, and less than the average of venereal disease and vaccina at Fort Meade, its admission rate was raised by an unusual prevalence of headaches and neuralgia, tonsillitis, dyspepsia, colic, constipation and other diseases of the digestive system, with contusions, sprains, lacerations and other injuries. At Fort Sheridan, malarial fevers, rheumatism and tonsillitis were comparatively infrequent; but this was more than offset by an increased prevalence of influenza, venereal disease and diseases of the digestive system. Fort Snelling was free from malarial fevers and influenza, but its admission rate was kept up by diarrhea, rheumatism, tonsillitis, venereal diseases, vaccina and injuries. The rates for specified diseases were lower in every instance at Fort D. A. Russell and Vancouver Barracks, except in the case of tonsillitis at the former and alcoholism at the latter.

The death rate at these large posts, 5.03, was smaller than the average, 6.44. Jefferson Barracks and the Presidio of San Francisco had no death during the year. The largest number, 7, occurred at Columbus Barracks, giving a rate of 11.84; 4 of these deaths were from pneumonia. Forts Sheridan and Sam Houston had each 5 deaths, of which 2 at each post were from injury.

The discharge rate, 17.46, was slightly below the average. The largest rate, 41.16, was that at Fort Meade, where 17 men were discharged; but the largest absolute number was 18 at Fort Omaha. Fort Sam Houston had 16 cases; the Presidio of San Francisco 2, which was the smallest number. The largest number from one cause at any post was 5, from consumption, at Fort Omaha, to which post cases were sent to be under the observation of the medical director, prior to their discharge.

Sixteen posts garrisoned by 300 to 400 men each.—The average admission rate of these was considerably, and the nonefficient rate slightly, above the average of the Army. Two had the Army average of admission, nine more than this, and five less. Washington Barracks, D. C., had the largest admission rate, 1,981.93, closely followed by Fort Reno, Okla., with 1,917.72, but the cases at the latter were of greater gravity, occasioning the high nonefficiency of 67.57. The excess at Washington Barracks was caused principally by malarial diseases, headache and neuralgia, venereal disease, and alcoholism. The malarial rate was unusually high, 563.25, as also the venereal and alcoholic, 156.61 and 60.24 respectively, the former causing a nonefficiency of 9.69. The excess at Fort Reno was caused by an increased prevalence of malarial and typhoid fevers, catarrhs, diseases of the digestion and injuries, the fevers mentioned having added 20 to the rate of nonefficiency. At Fort Monroe, Va., the excessive admission rate, 1,797.33, was due to diarrhea, specific febrile and venereal diseases. At Fort Sill, Okla., the rate of 1,653.18 includes 474.00 contributed by malarial fevers; while at Fort McPherson, Ga., the rate of 1,634.09 may be said to have been made up in its excess of venereal diseases and alcoholism, one out of every five men in the garrison having been under treatment for the former and one out of every eight for the latter during the year. The other posts having admission rates above the average are Fort Clark, Tex., Fort Custer, Mont., West Point, N. Y. and Fort Wingate, N. Mex. The excess at Fort Clark was occasioned by malarial, diarrheal and venereal diseases; at Fort Custer by specific febrile, venereal diseases and affections of the digestive system; at West Point by specific febrile diseases, rheumatism, catarrhs and injuries, and at Fort Wingate by injuries. Forts Keogh, Mont., and Robinson, Nebr., had the average admission rate of the Army; but at the latter post a considerable excess of rheumatism and injuries was offset by diminished rates under many other headings. The engineer station at Willets Point, N. Y., Fort Niobrara, Nebr., Madison Barracks, N. Y., and Fort Logan, Colo., had good records, which would have been improved had there been less diarrhea and alcoholism at Fort Niobrara and less alcoholism at Madison Barracks, the admission rate at this post having been 95.24, instead of 37.23, as in the Army generally. The post having the best record in this series was Fort Huachuca, Ariz., its admission rate only 899.37 and its nonefficient rate 24.54.

The death rate at these posts was 7.97, somewhat higher than the average, for which Forts Sill, Reno, and Keogh with 5 deaths each, and Madison Barracks with 4 deaths, were mainly responsible. Three deaths at Fort Keogh and one at Madison Barracks were caused by injury. The five at Fort Sill were caused, 2 by enteric fever, 2 by consumption, and 1 by injury.

The discharge rate was 15.05, rather smaller than the average. The highest rates, 28.90, 28.48, and 27.03, were furnished by Forts Sill and Reno and Madison Barracks, respectively, caused by 10, 9 and 9 discharges. Three of the cases at the last-mentioned post were due to rheumatism; the others were reported under various disease headings.

Fifteen posts garrisoned by 200 to 300 men each.—The average rate of admission, 1,330.08, was lower than in the last series, the rate of nonefficiency, 43.58, higher; in both instances in excess of the average rates of the Army. Eight of these had high rates; seven low. At four of the eight the rates were unusually high as compared with others in this series. Fort Hamilton, N. Y., had an admission rate of 2,354.96, which, according to the record, was occasioned by malarial fevers, 221.38 as against 63.75 in the Army generally; diarrheas, 381.68, as against 108.03; catarrhs and common colds, 450.40, as against 30.78, and injuries, 366.41, as against 252.74. The increasing sick rate at this post for several years back was noted in the last report of the Surgeon-General (p. 33), and the sanitary reports of the medical officers on duty were examined without success to ascertain the causes. A call was, therefore, made on the post surgeon, whose special report on the sanitary conditions as bearing on the prevalence of disease will be found below (p. 32). It seems probable that the views of the commanding officer indorsed on the said report are correct, and that the all-night pass indulgence had more to do with the unusual prevalence of catarrhs and common colds, diarrheas and injuries than any climatic or local sanitary conditions. The influence on the sick list of the withdrawal of this indulgence will be reported hereafter. At Fort Supply, Ind. T., the admissions reached the high rate of 1,801.50, chiefly through a visitation of influenza, which caused 531.64 as compared with the average of the Army, 93.71; diarrhea and bronchitis were also unduly prevalant. Malarial fevers and injuries in excess occasioned the large rate, 1,618.64, at Fort Myer, Va., the former caused 466.11 admissions as compared with 63.75, the average of the Army. Nonefficiency among the posts in this series was greatest at Fort Yates, 34.98, as compared with the Army rate of 39.60, and was occasioned by enteric fever, bronchitis, rheumatism and injuries. The post of Angel Island, Cal., had excellent rates, admission 960.14, nonefficiency 36.63; but Fort Sherman, Idaho, presented the best record of any in the series, admission rate 637.93, nonefficient 25.73.

The death rate was similar to that of the Army. Angel Island, Cal., Fort Thomas, Ky., and Fort Supply, Ind. T., had no death, but Fort Grant, Ariz., had 4, and Forts Bayard, N. Mex., Adams, R. I., Yates, N. Dak. and Myer, Va., 3 each.

The discharge rate, 23.18, was larger than the average, caused in great part by 14 cases at Fort Grant, and 13 at Angel Island.

Twenty-nine posts garrisoned by 100 to 200 men each.—The average admission rate in this series was 1,157.36, and the nonefficient 37.68, as against 1,270.42 and 39.60 in the Army. Eleven had admission rates higher than the Army averages; eighteen lower. The more notable of the eleven were St. Francis Barracks, Fla., 1,967.48; Fort Marcy, N. Mex., 1,886.18; Mount Vernon Barracks, Ala., 1,817.68; Fort Ringgold, Tex., 1,716.42, and Jackson Barracks, La., 1,650.94. The first-mentioned post had an excess of all diseases, specially marked in the cases of influenza, diarrhea, alcoholism, syphilis, rheumatism and diseases of the digestive organs and integuments. At Fort Marcy there was a similar excess of all diseases, diarrhea excepted. At Mount Vernon Barracks malarial and venereal diseases and injuries contributed chiefly to the excess. At Fort Ringgold, which had the highest nonefficient rate, venereal diseases gave an admission rate of 208.97; alcoholism, diseases of the integuments, and injuries also added to the high rates. At Jackson Barracks the rate for venereal disease was 198.11, and for alcoholism 179.23. The post of Fort Apache was indicated in the last report of the Surgeon-General (p. 33) as one of those which had been the subject of an increasing prevalence of sickness during several years past, although the sanitary reports had failed to show satisfactorily why this should have been the case. The post surgeon was therefore called upon to forward a special report on the sanitary condition as bearing on this question. His report, given below (p. 34), shows that while imperfect shelters and inadequate systems of police and sewerage exercised a harmful influence, the main cause was an increasing impurity of the water supply. The posts in this series having excellent rates are quite numerous, no less than ten of them having admission rates of less than 1,000 per 1,000 strength. The lowest admission rate, 518.52, was furnished by Fort Spokane with 25.26 nonefficient; the lowest nonefficient rate by Fort Mackinac, Mich., 15.48, with 736.84 admissions.

The death rate, 7.81, was above the average; the largest absolute number at any post was 3 at Benicia Barracks, giving a rate of 22.73.

The rate of discharge for disability was 22.45, also above the average; the largest absolute number, 8, occurred at each of three posts: Jackson Barracks, La.; St. Francis Barracks, Fla., and Fort McHenry, Md., giving rates respectively of 75.47, 65.04, and 50.00.

Thirty-nine posts, garrisoned each by less than 100 men.—The average rates of this series were lower than the corresponding rates of the Army: Admissions, 1,099.66, as compared with 1,270.42; nonefficient, 33.52, as compared with 39.60. At twelve posts the admissions were relatively more numerous than in the Army generally; at twenty-seven they were relatively less numerous. At posts in this series, having over 50 men each, the highest admission rate was reported from Camp Eagle Pass, Tex., 2,113.21, with 76.30 nonefficient; Fort Barrancas, Fla., reported 1,986.67, with 70.64; Sandy Hook Proving Grounds, N. J., 1,884.62, with only 19.13 nonefficient, and Fort Hancock, Tex., 1,860.00, with 44.65. The average death rate of these posts was high, 9.24; the discharge rate, 18.47.

In the field the rates were low, naturally, as the service in each case was not protracted. Admissions, 879.21; nonefficient, 13.93; death, 4.91.

The recruiting depots, Columbus Barracks, Ohio, Davids Island, N. Y., and Jefferson Barracks, Mo., belong to the class of posts garrisoned by over 400 men each, but differ from the others in that series in the unfamiliarity of the men with military discipline and methods. The admission rates of Columbus Barracks and Davids Island were, respectively, 2,059.23 and 2,115.32, and the nonefficient, 71.98 and 46.31; but as these rates are considerably increased by the vaccinations required by Army regulations, many of the recruits taking advantage of the slightest excuse to be relieved from drill or other uncongenial work, their comparison with the rates of other posts can be made satisfactorily only when the excess of vaccina has been deducted. When thus corrected for comparison the admission rate of Columbus Barracks is found to be 1,881.35, and its nonefficient rate, 64.78; of Davids Island, 1,600.41 and 31.28. The rates of the former station are exceedingly high, as is also the admission rate of the latter. When it is stated that at Columbus Barracks the admissions for venereal diseases numbered 292.72 per thousand of strength, and that these accounted for a nonefficiency of 18.54, the causation and general character of the excess of sickness may easily be understood. Instead of undergoing a systematic course of athletic exercise to develop their physique, nearly 30 per cent of these recruits pass a great part of their period of instruction on the sick list for diseases resulting from dissipation. The excess of admissions at Davids Island was mainly made up of slight cases of diarrhea and injury, the venereal rates being only 43.24 and 1.78. At Jefferson Barracks, notwithstanding an excess of malarial diseases, 193.69, as compared with the army rate of 63.75, and an excess of venereal, 136.37, as compared with 76.7, the admission rate for all diseases, less the excess of vaccina, was only 835.96, with a nonefficiency of 31.34.

Of the posts having bad records during the year, three had the admission rate over 2,000 per thousand of strength, Fort Hamilton, Davids Island, and Columbus Barracks; four ranged from 2,000 to 1,900, Fort Barrancas, Washington Barracks, St. Francis Barracks and Fort Reno; three from 1,900 to 1,800, Fort Marcy, Mount Vernon Barracks and Fort Supply, and two from 1,800 to 1,700, Forts Monroe and Ringgold. Of the posts having the highest nonefficient rates three reported 70 and over per thousand of strength, Columbus Barracks and Forts Barrancas and Ringgold; four ranged from 70 to 60, Forts McIntosh, Reno, Yates and Clark; and nine from 60 to 50, Forts Bayard, Sam Houston and McPherson, Jackson Barracks, and Forts Marcy, Canby, Custer, Wayne and McHenry. The causes of the high rates at most of these posts have already been indicated briefly. Excluding the recruiting depots, arsenals and smaller posts, Fort Barrancas may be regarded as presenting the worst record. In 1889 and prior years this post had rates rather lower than the average. Since that year they have been unusually high, mainly caused by diarrhea, alcoholism and diseases of the integuments. It has been suggested that the cutting down of some trees in a marshy locality between the water line and the post was the cause of the increased sickness, but the rate for malarial disease does not sustain this theory.

Exclusive of the smaller posts and arsenals, those posts having the best admission rates were Fort Spokane, with 518.52, and Forts Washakie, Missoula, Niagara and Sherman, with rates ranging from 600 to 700. The best nonefficient rate, 15.48, was reported from Fort Mackinac. The rates ranged from 20 to 25 at Forts Washakie, Wadsworth, and Missoula, Benicia Barracks, and Forts Warren and Huachuca.

The special reports on the sanitary conditions at Forts Hamilton and Apache are as follows:

FORT HAMILTON, N. Y., *Major Ezra Woodruff*: Fort Hamilton is situated on the southwest shore of Long Island, on the Narrows, latitude 40° 43′ north, longitude 74° 1′ west, distant about 6 miles from New York City. The elevation of the land is from 30 to 60 feet above the sea-level. The reservation contains 153 acres, of which 53 have been lately added by purchase. The addition is much lower than the older part and slopes to the sea-level at the Dyker meadows.

Fort Hamilton proper is at present only occupied by the regimental band, guard, prisoners, and several married soldiers. The four batteries are quartered in brick barracks, irregularly located on the reservation; two of these were built in 188

Most of the officers' quarters front on the village street, called Fort Hamilton Avenue.

The climatic conditions prevailing are the same as those of New York City, Brooklyn, and the Eastern shore generally. The climate is variable and liable to sharp and sudden changes. The average annual temperature is 49° to 51° Fahr. There is marked irregularity in the rainfall; average annual amount, 42 inches. Prevailing winds southeast in winter and southwest in summer.

The soil is of glacial drift origin, and contains immense numbers of boulders. It consists of red clay with more or less sharp sand intermixed, and presents a very uneven surface, small hills or knobs with corresponding depressions dotting the country around the post.. In these little valleys there are collections of water forming either permanent or temporary ponds: not so numerous as they were some years since, when it was calculated by a good authority that there were sixty ponds within a radius of 1 mile of the post.

While the soil is generally of red clay mixed with sand, there are spots where peat bogs exist. One of these was situated in the center of the reservation and has been filled in with earth. The Dyker meadow is a large bog of many acres in extent, which adjoins the reservation on the east. The large central area, about 9 acres in extent, now surrounded irregularly by buildings, resembles the bottom of a shallow dish, into which pours the drainage from all sides, and from which there is no natural outlet. The surface water is absorbed by the soil. The center of this area is the site of the old peat bog, on which many thousand cubic yards of earth were placed at an expense of $17,000. The result has been the formation of a level plain, but too low for natural drainage.

The drainage of the post is by means of earthen pipes of various sizes, which carry the house waste and sewage from all the buildings into tide water. The system is good and serves its purpose thoroughly.

The water used for the last six years is furnished by the Brooklyn City Water Works. It comes from small lakes and driven wells on Long Island. It is supplied to all necessary buildings, which possess all the modern conveniences. The supply is unlimited and the quality good.

The sanitary condition of the post is good. Policing is thoroughly and systematically attended to. There is no chance for filth to collect because of the constant efforts to prevent it.

The region about Fort Hamilton has changed very much within the last six years. It has ceased to be country and has become a suburb of Brooklyn. Many miles of new streets have been cut through, hills have been leveled and valleys filled, and a vast extent of new earth has been exposed.

In the above statement I have endeavored to present the physical characteristics of Fort Hamilton, which may be a basis for the formation of a correct opinion as to the causes of the increase of sickness during the last six years. In my opinion Fort Hamilton well deserves its reputation as a malarious region. Malaria and its allied diseases have prevailed here for many years. I think the existence of the ponds are among the main causes of the prevalence of this class of disorders, but as they have existed for a long period of time and even in greater numbers than they do now they can not have caused the increase in the sickness at this post in the last six years; but I believe they are still an active factor. When last summer the long drouth caused the ground water to sink and many ponds dried up there was a decided increase in the cases of intermittent fever. The rapid and extensive disturbance of the soil made by grading and opening new streets has been a cause of increased sickness. The winter climate here also produces cases of zymotic diseases. Colds, tonsillitis and attacks of acute catarrh follow the severe storms which strike the Long Island shore at this point.

In May, 1890, the Fifth Artillery left this station after a nine years' occupancy. The numerical strength of the command was small; there were few new recruits; many of the men were married and nearly all were thoroughly acclimated. The First Artillery took station at this post in May, 1890, coming from the Pacific coast. In that year, also, the strength of the batteries was increased and numbers of recruits were received, many of them from the interior, thus causing such a change in the garrison that increased sickness may have resulted.

The attractions outside the post, in the shape of liquor saloons and other temptations to immorality in causing irregular habits, may have caused an increase in the sickness.

There was a severe epidemic of influenza in December and January, 1889 and 1890, leaving an epidemic influence behind, which again broke out with violence in December and January, 1891 and 1892. These epidemics have aided in increasing the number of cases taken sick.

In 1889 one company was sent to Fisher's Island for target practice. This was a notoriously unhealthy camp, and in September, 1889, there were 13 cases of intermittent and remittent fever, most of them due to their stay at Fisher's Island.

Col. Langdon, First Artillery, commanding the post, indorses on this report his views, as follows:

The enlisted men are not restrained as much as formerly from opportunities for indulgence in dissipation. This results partly from the liberty of remaining out of barracks till eleven o'clock at night. Then, too, there is a mistaken idea that giving the men all the indulgence possible will lessen desertion, and this leads to the too indiscriminate granting of "all-night passes." Men who dissipate all night do not feel much like attending to duty in the morning, and indeed must, in many cases, be really ill, and should, whether saints or sinners, have medical attention. Many such cases would puzzle any physician, and a complaint that would not keep a laboring man from his work one hour will, in the case of a soldier, relegate the sufferer to the hospital. The "all-night pass" indulgence has been suspended.

FORT APACHE, ARIZ.—*Capt. N. S. Jarvis:* Fort Apache is situated on a bluff bordering the east fork of the White River, a small stream which takes its rise by two branches in the Sierra Blanco Mountains of Arizona. The post lies in longitude 109° 54′ west from Greenwich, latitude 33° 47′ north. The country for miles around about has been the theatre of violent volcanic eruptions, of which marked traces are present on all sides. The banks of the White River, at various parts of its course, consist of basaltic volcanic rock, which has been partly cut through by the river, and by the excavating action of the water huge fragments have been detached and thrown into its bed. The bluff on which Fort Apache stands is made up largely of volcanic rock, which has been gradually concealed from view by sedimentary deposits of sand and gravel. Through breaks in the volcanic layers strata of carboniferous rock are at points brought to view, as at the south end of the post at the site upon which the present reservoir stands, and on the opposite side of the White River, where an abundance of good building lime is available. Limestone and gypsum are more or less abundant on the river banks, and are of importance as touching the composition of drinking water.

The canyon of the east fork, which bounds the post on the north, has an average depth of 100 feet, and runs approximately 25 to 100 yards from the line of the officers' quarters.

The valley of the White River at this point—the confluence of the north and east branches—is narrow and shut in by elevated bluffs of volcanic origin. The only apparent outlet is to the west down the river. Otherwise the post is "boxed in," as it were, giving the vicinity a peculiarly somber character. I have heard old and experienced officers speak of the depressing effects peculiar to the locality.

The White River is a narrow stream with a swift current, and the flat ground in its bed is covered with brush, and at frequent intervals volcanic rocks. At some parts of its flow the river bottom is spread out, and these sections are extremely productive to the Indian farmers, who have "taken up" much of the land. The most extensive patches of this land lie on the east fork, and for a distance of 10 to 12 miles the Indian farms extend. I am informed that the acreage has increased 100 per cent during the last five years. The necessary water for irrigation is, of course, derived from the river.

The barracks are of two kinds—frame weatherboarded structures and adobe. They are seven in number, and comprise three adobe and four weatherboarded structures. The adobe buildings are of comparatively recent construction, and better adapted to proper quartering of troops than the frame structures. The barracks are numbered, from west to east, 1 to 7.

No. 1, of adobe brick one foot in thickness, is a comparatively new structure. Like all the barracks to be described it is in the shape of a double L. The west or right-hand wing is intended for use as kitchen and mess room, the left-hand or east wing as a squad room.

The main barrack room measures 106 by 24 by 12, giving a capacity of 30,528 cubic feet; the squad room 59 by 24 by 12, giving 16,992 feet. Ventilation for this structure was provided for by three small slatted frame windows 2 feet by 2 feet 6 inches at the east gable of the main room and both gables of the wings. These slatted ventilators open into the barrack loft, and fresh air is supposed to enter the barracks through trapdoors in the ceilings, which I would state parenthetically are too often closed by the men. At present this building is occupied as the "post exchange."

No. 2 is a frame weatherboarded structure built some years back. Its size is as follows: Main dormitory 106 by 24 by 12 feet; squad room 58 by 25 by 11 feet. It is entirely devoid of artificial means of ventilation, the trap-doors opening into a closed loft. At present the building is used by the Interior Department as storeroom and schoolhouse.

No. 3, an adobe structure, is similar in design and appearance to No. 1. Main barrack room 105 feet 8 inches by 24 feet by 12 feet 4 inches; squad room 59 feet by 24 feet by 12 feet. The main room is occupied by 39 men of F Company, Eleventh Infantry. The squad room is used as an amusement resort. No systematic ventilation whatever was provided for this building. Two trapdoors, 2½ feet by 3 feet, open into a closed loft. Otherwise the structure is comfortable and well arranged. Being of adobe it retains the heat much more satisfactorily than the weatherboarded barracks. The west wing is used as kitchen and mess room. Adjoining the kitchen is a small lavatory provided with hot and cold water.

No. 4, a frame weatherboarded structure, is now occupied by I Company (Indian), Eleventh Infantry. The main barrack room measures 106 feet 7 inches by 11 feet 9 inches by 12 feet and shelters 49 men. Opening into a closed loft at each end of the ceiling are two trapdoors 2 feet by 3 feet. There is therefore no ventilation for these men except by the accidental opening of a door or window. As there are many cracks and other defects in the walls, heating of the room is difficult. The squad room in the left wing has an area of 11 feet 3 inches by 24 feet by 58 feet, and holds at present 27 men. Ventilation, at my instigation, was recently partially provided for in the shape of a ridge-pole ventilator 3 feet 6 inches by 2 feet 6 inches, with the usual trapdoor, which is so frequently closed by the men. As in other barracks, the right-hand wing comprises kitchen and mess room, with small lavatory attached.

No. 5, occupied now by H Company, Eleventh Infantry, of same general ground plan, has the following measurements: Main barrack room 105 feet 10 inches by 24 feet by 12 feet 4 inches; squad room 33 feet by 24 feet by 12 feet. The company, comprising 36 men, is confined to the main dormitory; the squad room utilized as amusement room. Some attempt to ventilate was made in building this structure, but it is merely an excuse for proper ventilation. At each gable of the main building and wings is a small slatted window 4 feet by 5 feet. Opening into the loft are six good-sized trapdoors, through which change of air can take place. The right wing contains kitchen, mess room, and lavatory.

No. 6, a weatherboarded building of same general design and workmanship, has approximately the same proportions. The right wing is utilized as schoolroom for enlisted men. Ventilation is supposed to occur through opening of windows or doors. The rest of the building is used as a storehouse.

No. 7, now occupied by D Troop, First Cavalry, constructed of adobe, was built within the last few years. Its dimensions are: Main barrack room 106 feet 4 inches by 24 feet 3 inches by 12 feet. It is occupied by 34 men. In the ceiling are two small openings into the loft 2 feet by 2 feet 6 inches, at the extremes of the room. At the gables of the wings and main room slatted windows, about 2 feet by 2 feet 6 inches, are the means provided for admission of fresh air to loft. The right L is divided into kitchen and mess room; the left, measuring 59 feet 2 inches by 24 feet 3 inches by 12 feet, is used as squad room and quarters 12 men. The usual small trapdoor in ceiling for ventilation.

Quarters for married soldiers and officers.—For the noncommissioned staff three good frame structures are provided, containing each two bed rooms, living room, kitchen, and small bathroom with hot and cold water.

Two double frame houses, each containing four rooms and kitchen, shelter some of the laundresses. The bed rooms measure 10 feet by 10 feet. They are compactly built and at present are very comfortable. In the rear of the company barracks, between them and the privies, are several old "tumble-down" structures, built of refuse lumber. Fortunately but two of these are occupied at present. Several of a similar nature were torn down at my request, and promise has been made to gradually remove the remainder, thus throwing the laundresses away from the immediate proximity of the barracks. One of these forlorn structures, containing four rooms of varying dimensions, is used by the married soldiers of I Company, Eleventh Infantry. Constant watchfulness is demanded to compel cleanliness on the part of these people.

Guardhouse.—A modern sandstone building, containing cells, prison room, guardroom, and room for noncommissioned officers of the guard. The guardroom measures 32 by 24 by 11 feet, and has no other means o ventilation than the accidental opening of window or door. There are on an average 12 men in this room. The prison room, 21 by 24 by 11 feet is also devoid of ventilation except such as may come from the grated door. The loft is well provided with air coming through spaces between the roof and the side walls at the eaves. A small trapdoor in the hallway is the only means by which this fresh air can enter the rooms.

Officers' quarters.—The officers' quarters number fifteen, of which twelve are frame structures, three just completed of sandstone.

The material for the wooden buildings, obtained largely from neighboring forests, was poorly seasoned, and in consequence of warping and twisting the cottages are far from weather-tight. Through the ceilings of some of the bed rooms the sky is visible. By reason of cracking and badly-jointed timbers, they are very cold in winter, and have always been a subject of complaint. Most of these cottcontain two to three bed rooms, kitchen, dining room and sitting room. The bathroom has provision for cold water only.

The three new stone structures are, however, exceptions. The two smaller ones, of one story, contain each three bed rooms, sitting room, kitchen, and bathroom (closet attached) provided with hot and cold water. The soil pipes from the closets empty into a common sewer pipe for the three stone buildings, and it throws its contents into the canyon in rear of the quarters. The largest of these stone quarters, intended for the post commander, has two stories, beautiful large rooms, plate glass windows, etc. There are in this house about six bed rooms, dining room, parlor, kitchen, and bathroom with water-closet attached.

The wooden buildings, although roomy, are not properly adapted to this climate, which is noted for its cold nights and extremes of temperature. After snow or during the heavy rains of summer the roofs leak dreadfully, in consequence of the defective workmanship and materials.

Post schools.—The school for children is held in the post library—also utilized as a chapel. It is a roomy well-built frame structure, measuring 60 by 24 by 12 feet. There is no proper provision for ventilation, and when crowded the place becomes extremely oppressive.

Heating and ventilation.—The barracks are heated by the usual barrack wood stove. Those structures of adobe, compared with the weatherboarded, retain the heat much more readily. With the latter the cracks and imperfections in the jointing of the walls permit more or less cold air to enter.

By reference to remarks under buildings it will be seen that no proper provision has been made for constant and systematic ventilation in any of these barracks. In some, slatted windows, allowing a limited volume of air to enter the barrack loft, are inserted in the gable ends. The air is supposed to enter the dormitories through trapdoors in the ceilings, which, unfortunately, are too often closed by the men. Supposing the slats in these crude ventilators to shut out 50 per cent of the air, those having dimensions of 4 feet by 5 feet would permit 10 square feet of air to enter the loft; those 2 feet by 2 feet 6 inches would represent a flow of only 2 feet 6 inches square.

All these barracks need ventilation, and we see in some, such as Nos. 3 and 4, no ventilation of any kind exists excepting in the squad room of No. 4, where a small ridge-pole ventilator has been recently added. The main barrack room of both these buildings, occupied respectively by 39 and 49 men, have no scientific method of aeration whatever, and even if two or more windows were kept constantly open, I doubt if the purpose would be subserved.

No chemical examination of the air in these close barracks has been made, but to one coming from the outer world the atmosphere in these crowded rooms is intolerable. What the ultimate effect may be on the I Company people (Indians), susceptible as they are to crowd poisoning, can be imagined.

In barracks No. 3 we find the same unhygienic state of affairs—no provision for fresh air or exit of foul. Barracks No. 5 (H Company, Eleventh Infantry) is somewhat more favorably placed. Slatted ventilators permit the entrance of fresh air to the loft, and several good-sized trapdoors in the ceiling allow the current to enter the dormitories. Unfortunately there is some difficulty in heating this as all the frame buildings, and in search for warmth the men close these trapdoors, thus neutralizing any good results in the way of oxygenation. No. 7, occupied by D Troop, First Cavalry, is also defective in this respect. At the gables of the main building and wings are small slatted windows 2 feet by 2 feet 6 inches. The current of air circulating through the loft is supposed to enter the rooms through a few small trapdoors (2 feet by 2 feet 6 inches) in the ceiling. Constructed of adobe, this building is readily heated and is also closer than the weatherboarded barracks. The post hospital is the only properly ventilated structure at the post.

Drainage.—By reference to the topographical description of the station, it will be seen that nature has well-provided for drainage, the inclines running towards all points of the compass, and no structure so situated that it can not offer ready means for the escape of surface water. Surface drains, following the inclines, have been dug for all buildings, but unfortunately, through carelessness, are constantly clogged with débris, thus damming and spreading the waste water over the surface of the ground. All the waste water from the barracks, lavatories, post bath house and bakery empties into a narrow ditch running east and west. When I came here the west end of this ditch, as it passes by the hospital inclosure, had become clogged by an extensive growth of weeds and bushes. In consequence the channel was almost obliterated, more or less filth constantly accumulating and decomposing within a few yards of the hospital. The odor was distinct in the hospital wards. Fortunately this is now cleaned out. Waste water from bathrooms and kitchens in the officers' quarters passes into the canyon to the rear of the buildings. The bath water, kitchen refuse and rain water enter a common wooden drain three inches deep and wide. This covered drain carries the refuse water into the alley, in turn emptying into an open ditch. The open ditch then throws its contents into the canyon. The outlet of the small wooden drain has frequently become obstructed, so that for months at a time the waste water had no apparent exit. In consequence of backward pressure on the wooden channels the narrow strip covering the drain had been forced up sufficiently to allow the liquids to enter the soil. Naturally porous, it had absorbed these discharges for an indefinite period. These obstructed drains were traced with considerable difficulty, cleared, and precautions taken to prevent future clogging. No traps have been placed at any water fixtures in these quarters. Former post surgeons have frequently urged that these wooden drains be opened. As they are now, there is little doubt but that their extent of 50 to 75 feet can permit of the formation and escape of much noxious gas into the houses.

The new stone structures are somewhat more modern,—traps for the protection of the inmates have been provided and the sewage passes into a common sewer pipe discharging into the canyon.

Waste water from the laundresses' quarters passes through surface drains into the dry ravines; as also that from the noncommissioned staff quarters. The surface drains attached to the latter quarters become frequently obstructed, and waste water which would readily flow into the ravine in the rear is permitted to stagnate and saturate the soil.

Disposal of excreta.—Except in the case of some of the officers' quarters the pit system of privies is in vogue here. The company closets are located on the edge of a ravine. When we consider the length of time these privies have been in use here an enormous amount of excrement has been allowed to deposit in the soil. By virtue of the location of these company pits on the slope of a ravine, there is little danger that any dwelling would be erected immediately on the ground. Constant saturation of the soil with human excrement may in the course of time affect the health of the men. Earth-closets are in use at some of the officers' quarters and there seems little difficulty in providing for their police. The excreta from the stone quarters pass into the canyon through a system of sewer pipes. Pit privies are in use at the laundresses' and noncommissioned staff quarters and constant watchfulness is demanded.

Drainage of the valley.—This is important as affecting the health of the command, particularly the condition of the valley above the post. At a distance of half a mile from the post is a marsh embracing about three to four acres. The records show that this has existed for an indefinite period, the post surgeon in 1882 having urged its drainage.

The Indian farms extend a distance of 10 to 12 miles up the east fork of the White River. The necessary water is taken from the river by means of irrigating ditches. These ditches become broken by horses and cattle, and no care having been taken to turn back the water after the season has ended, it passes through the numerous breaks in the banks, saturating the soil and rendering it quaggy. The emanations from this wet soil are certainly not condusive to health and undoubtedly affect those living in the valley. All the conditions are favorable to the development of malarial miasm. The frequent morning dews, fogs, frosts, and perceptible sense of dampness at night indicate the presence of moisture, and I am told this has increased in direct ratio to the increased irrigation.

Food and clothing.—As far as the food is concerned little can be said. The men have an abundance of good beef and vegetables, and although there is little variety the ration is substantial, and as a rule well cooked.

Habits and morals.—Nothing in the habits or morals of the men would explain the heavy sickness here. A few cases of alcoholism and venereal disease present themselves, but I do not think the proportion unusual.

Water supply.—The water supply here has long been a subject of complaint, controversy and anxiety. Assistant Surgeon Raymond in 1882, referred to the possible contamination in the future by farms above the post, and his prediction has certainly been verified fully, as the many reports from succeeding post surgeons have proven.

In my monthly sanitary reports I have endeavored to explain the situation as clearly as possible, but a further reference may not be amiss in this report. Since the establishment of the post the water has been derived from the river, first carried by water wagons and then a pump substituted. Prior to the establishment of extensive farms above the post a purer or more inviting looking water could not be imagined. In 1889 these farms extended a distance of only 3 miles above us, but gradually increasing in number and area have reached an extent of from 10 to 12 miles. In 1889 Capt. McMurray, of the First Artillery, was sent here as a special inspector to propose some plan for the betterment of the post water supply. Thne the farms reached but 3 miles up the east fork, and by drawing the water above these farms it could be obtained in its original purity. It was, therefore, at tha time a plausible solution of the vexed problem, and the inspecting officer reco mended its adoption. But with the usual slowness where the hygiene of a post is concerned, this plan has just been carried out.

But now, unfortunately, conditions are changed. As far as the quantity of water goes nothing could be desired, but as the completion of this flume has merely eliminated a fractional part of the danger, the water is not pure. The flume is an ingenious and well-constructed affair, originating a distance of 3 to 3½ miles above the post at the site of the Indian mill and workshops. It flows tortuously at the base of the foothills south of the river and strikes the post reservoir on the east side. The water pollution is produced in this way: (1) When the farming season is passed and crops garnered horses and cattle are permitted to feed on the deserted lands, from which they derive considerable nourishment in the way of husks and other remnants of the corn crops. Their constant presence on the land insures an accumulation of manure, which is also increased on some farms by artificial fertilization. (2) The presence of large quantities of water on these bottom lands from neglected and broken ditches favors the decomposition of this animal and an abundance of vegetable débris. When the dry season begins the water is permitted to overflow these fields in large volumes and the surplus reëntering the river carries with it this dissolved and suspended organic matter. During the last season particles of débris were visible to the naked eye in the water, and if permitted to stand for a few hours a repulsive odor of decomposition was perceptible. The reservoir, after receiving its supply through the flume for about one month, was recently cleaned. The mud and débris on the bottom were fully 6 inches deep, and the smell far from pleasant. The current in the flume is rapid, so that it will not permit the precipitation of mud, organic material, or silt. As the river is at many points inaccessible on account of brush and wire fences, what is more natural than that stock should seek this exposed ditch for water? That this is true is proven by the constant breaks in the banks and the thousands of footprints along its course.

A recent promoter of this scheme conceived the idea of supplying the necessary power to the post sawmill through the medium of this water, and in the fascination of this ingenious proposition, seemed to lose sight of its original purpose, the furnishing of pure drinking water.

Another objection to the ditch is the danger of freezing, clogging, and thus breaking its banks and shutting off the supply. This accident has occurred twice already this winter (an unusually mild one), the only resource being to clear its entire course—by no means an easy task—and the result was a copious supply of water so muddy as to be almost opaque. The problem is difficult of solution.

As suggested in my sanitary reports, a good deep well would appear the only hope, but owing to extensive substrata of lava it seems doubtful whether a well could be sunk in the immediate vicinity of the post. Extensive boring would alone answer the question, but under the circumstances, I believe the procedure warrantable whatever the cost. I am informed that the flume recently completed cost the Government $1,000 and probably called for much soldier labor. As before stated, at the time when this ditch was conceived the idea was excellent, but conditions have changed greatly by the decided multiplication in acreage of the farms.

Prevailing diseases.—The records show that the large disability at this post has resulted from (1) rheumatism, (2) affections of the digestive tract, (3) malarial diseases, (4) diseases of the respiratory system.

Rheumatism: From what I have observed and can glean from the records, the predominating types are (1) subacute articular, (2) chronic articular, (3) muscular.

Instances of the acute type with high fever, great prostration, etc., are in the minority. The records, however, show many cases of acute rheumatism, which, from their brief stay in the hospital, were undoubtedly of the subacute form—cases, for example, retained but three to five days, which would have been impossible in typical cases of inflammatory rheumatism.

Although some etiological factors which have escaped my notice may be active in the production of rheumatic affections, I think that we have pointed to local hygienic defects which would be indirectly concerned: (1) Total absence of ventilation in some of the barracks and defective aëration in others, conditions bearing upon the origin of these affections. The constant presence of breath-polluted atmosphere in these barracks interferes with the natural elimination from the skin and lungs, and places the system in a condition rendering the man more susceptible to rheumatic affections. (2) The large increase in farm land in the valley creating increased humidity. (3) The marked variations in temperature between day and night. (4) Some of the barracks (weather-boarded), owing to structural defects, are warmed with the utmost difficulty, and the temperature can not be constantly warm or uniform.

Malarial diseases: The most common malarial manifestation here is either the intermittent or remittent type of fever. In spite of the most salubrious surroundings these fevers will appear in all parts of Arizona; but certain local conditions favorable to the increase and spread of malarial miasma have been emphasized: (1) The marshy land above the post and the saturated soil of the Indian farms form congenial hotbeds for the birth of the poison. (2) When the wind blows from the east it sweeps directly over the post and can carry with it seeds of infection. (3) The drinking water, polluted by passage over the farms, can introduce into the system the germs of the disease, or at least place it in a favorable condition for its development.

Like most instances of mountain fever met with in the southwest, the fevers here do not yield to quinine. The treatment adopted, I believe, by most practitioners, is expectant and stimulating; antipyretics to reduce extremely high temperature; quinine in tonic doses, arsenic and alcohol *pro re nata.*

Diseases of the digestive tract: Diseases of the gastro-intestinal system play no unimportant part in the sick list here. Affections of this post are: (1) simple intestinal colic; (2) cholera morbus; (3) simple diarrhea without tormina; (4) diarrhea with sanguineous passages, etc.; (5) acute dysentery; (6) chronic dysentery.

These diseases are so frequent during the warm season that the majority of the garrison use boiled water. There is little doubt but that the drinking water more than any other factor has been responsible for so much of this sickness. The causes of water pollution and the description of the supply have been touched upon in the discussion of water previously. During the winter season the percentage of sick from these causes is relatively small.

There certainly is nothing in the clothing or food of the men that could explain the prevalence of these diseases.

Diseases of the respiratory system: It is evident that many conditions here are favorable for the production and prolongation of these diseases: (1) acute bronchitis; (2) subacute bronchitis, with mucous râles and more or less cough and soreness of the chest; (3) tonsillitis; (4) chronic follicular pharyngitis, and an acute congestive variety.

Again we would be justified in suggesting defective ventilation as an etiological factor in the production of predisposition to these affections. Certain it is that from my own observation patients returned to duty apparently cured, quickly relapse, and I have concluded that detention in the hospital until all signs of disease have long since disappeared is wise economy.

The moisture evaporated during the heat of the day is rapidly condensed as night approaches, making the valley decidedly damp and uncomfortable. This is one of the few stations in the southwest where morning mists and heavy frosts are met with. The marked extremes between the day and night temperature, varying from 30° to 50°, should in the presence of moisture play an important part in the production of pulmonary or rheumatic affections. Quite a number of cases of tonsillitis along the officers' line were observed last June, which from what I learned were suspiciously diphtheritic in history and appearance. I have no doubt now but that the accumulation of waste water in the yards was the promoting cause.

General conclusions and recommendations.—It will be seen from the description of the various hygienic defects upon which I have touched that many former post surgeons here had noticed these conditions and made persistent appeals to the post commanders in the monthly sanitary reports for their removal. It is therefore a matter of interest to discover that predictions as to the possible effect of the unhygienic conditions have been largely verified and that the suggestions were not made by the medical officers without forethought and intelligence. That their recommendations for the removal of sanitary perils have been ignored the sanitary reports will show; and as many of these suggestions could have been carried out with little expense, it makes the neglect all the more censurable. From what I can learn, it is my belief that the poor police of this post for the past few years has had much to do with the sickness. It required some time after my arrival here to learn the true state of things, but when told that pit privies, filled to the seats, drains clogged and ill-smelling, old deserted buildings, receptacles for the accumulation of filth, and other conditions too numerous to mention, had been a menace to the health of the post for an indefinite time, I was forced to the conclusion that bad police was one factor in filling the hospital. It has always been my aim, in submitting recommendations as to the hygiene of the post, to propose some plan of procedure within the powers of the post commander to carry out, and that would involve as little expense as possible. However, there is a limit to this method of action, and when the loss to the Government in sick and disabled is considered, as at this post, money spent in the amelioration of sanitary conditions would be wise economy. It is with a full consciousness of the importance of the subject that I submit the following recommendations. I am informed that the post quartermaster has been directed to submit estimates for a sewerage system; until such a system can be completed I would suggest that all surface drains be deepened, straightened, and well paved with flat stones. This would involve considerable labor on the part of the command, but would be comparatively inexpensive; I would suggest that all the closed wooden drains, carefully described in connection with the officers' quarters, be opened and well-paved surface drains be substituted; that the pit-privy system be abandoned and movable earth closets be substituted at all buildings; that stringent measures be adopted to insure regular flushing of surface drains.

With reference to the buildings, I would advise that the troops be quartered in adobe structures entirely; that the barracks now in use as a "post exchange" be used to shelter one of the companies now occupying weatherboarded barracks; that an aditional set of adobe barracks be constructed, thus providing adequate shelter for four companies, and that the old weatherboarded barracks be abandoned as quarters for troops; that proper ventilation be provided for all the barracks by means of ridge-pole ventilation in connection with under-floor channels; that the wooden quarters now occupied by the officers be gradually replaced by adobe or stone buildings.

As to the water supply, sufficient has been said to indicate what measures I consider expedient; prospecting by boring until an underground flow sufficient to insure a good well is found; that the supply main be increased from 3 to 5 inches, and that the present system of supply be abandoned as dangerous and uncertain.

To remedy the defects in the valley, to which I have invited attention as productive of moisture, I would suggest that the Indian farmers be required to turn back the water passing through the irrigating ditches into the river as soon as the season has passed, and that the old marsh immediately above the post be drained by abundant surface or tile drains.

Until these various measures are carried out it is my opinion that little can be expected in the way of lessening the sick report at this post.

Remarks of post commander.—There is no doubt whatever but what such unhealthiness as exists at this post is due mainly to lack of a proper sewerage system, and to the impurities that get into the water, which is otherwise pure.

I consider the impurities in the water to be the chief cause. The water now runs through open ditches either to the pump well or direct to the reservoir. In either case roaming cattle, ponies, Indian dogs, etc., trample and wallow in the ditches, which are from 1,000 feet to 4 miles long. I think if piping (iron or tiles) were used to carry the water to the pump house and a filter well or cistern placed there, the difference in the quality of the water would be greatly improved at a slight expense. As to sewerage, few posts are better or as well adapted for an excellent sewerage system as this one, and that, too, at a comparatively small cost.

Every set of officers' quarters and barracks here should be at once provided with both hot and cold water, as they now are with cold water alone, and good water-closets, such as are now in the new sets of officers' quarters.

Remarks of medical director.—After a careful reading and study of the several sanitary reports received at this office since the beginning of my tour of duty in this department, as well as of correspondence relating to the health of Fort Apache, I am convinced that the unsatisfactory condition of health at this post is mainly due to a polluted water supply, though the other factors alluded to by Dr. Jarvis have undoubtedly had their full weight, and that, if it is intended to continue this post, it will be imperative to introduce a supply of pure water either by artesian boring or by a line of iron piping, which will take the water from above any possible source of pollution. Concurrent with the water supply a well-arranged and scientific system of sewerage is needed.

THE PREVALENCE OF SPECIAL DISEASES.

SPECIFIC FEBRILE AND ACUTE INFECTIOUS DISEASES.

The specific febrile and acute infectious diseases, including under this heading erysipelas, tonsillitis, and cases reported as typho-malarial, gave an admission rate of 141.85, a noneffícient rate of 4.09, and a death rate of 0.86. Of the admission rate 74.08 represents the prevalence of influenza and 41.90 that of tonsillitis; measles, mumps and enteric fever form the mass of the remaining cases, as noted below.

Cerebro-spinal fever.—Two cases were reported among enlisted men, one at Fort Wayne, Mich., the other at Fort Leavenworth Military Prison. One recovered, but the man had to be discharged on account of resulting mental vacuity; the other died, and the diagnosis was confirmed by the appearances discovered post mortem.

Chicken pox.—Thirteen cases were reported from nine different posts, at none of which was small pox present.

Cholera.—In anticipation of an invasion by this disease on account of its prevalence at some of the European ports largely concerned in the shipment of immigrants to this country, medical directors and post surgeons were duly reminded of the precautions requisite for the protection of our military stations. The following circular was issued by Surgeon-General Sutherland:

> This circular is published for the information and guidance of medical officers who may be unfamiliar with the general management and prevention of cholera, and for others who have received no specific instructions from medical directors of the Army.
>
> As this disease by its presence at the New York quarantine now threatens the whole country, a great object will be gained if we succeed in preventing it from appearing at our military posts by thorough and effective sanitation and cleanliness.
>
> Science and experience have demonstrated that cholera is caused by a specific germ which must reach the bowels in a living state; that this germ maintains its vitality and harmful properties under many conditions, the most important being in the discharges from the bowels of the sick, in their soiled clothing and bedding, in the privies and cesspools which receive the discharges, and in the soil and subsoil waters which become secondarily contaminated.
>
> Guided by these principles, we may determine what is to be done, first, in anticipation of an invasion, and, second, when the invasion has taken place.
>
> First. As cholera germs can live and multiply for a time outside the body in the presence of decayed organtic matter, particularly that of animal origin, all conditions favorable to their existence should be excluded. The measures necessary to accomplish this are to remove all decaying matters from a post, whether found in dwellings, cellars, barracks, stables, dunghills, old wells or cesspools, coalbins, or other hiding places, and to require absolute cleanliness of all persons. These are general, but particular instructions should be given for the inspection, condemnation, and destruction of all tainted meat, fish, unsound vegetables, fruit, or any other article of food that would tend to cause diarrhea.
>
> If cholera be in the vicinity of a post, a thorough and efficient quarantine should be kept up against the infected locality. No person should be admitted within the lines without undergoing quarantine examination; no baggage nor supplies without being disinfected or passed by the medical officer. Police regulations should be scrupulously carried out. The troops should be preserved from all antihygienic influences. There should be no unnecessary exposure to sun, rain, or night air, and no drills nor fatigue duties other than to furnish occupation and needful exercise. When the military conditions permit, the post should be viewed as engaged in an active campaign against an insidious and implacable enemy, and the attention of every officer should be devoted to superintending the conduct of his men, with special reference to this view.
>
> Articles of leather, such as trunks, boots and shoes, suspected of cholera infection, should either be destroyed or washed with disinfecting solution. Attention has been called to the influence of old shoes as a means of propagating the disease; when a person treads a soil more or less damp in an infected locality there is every chance of his conveying the germs of the disease.
>
> A quiescent state of mind should be enjoined upon all; nothing is more calculated to spread the disease than unusual excitement or the depressing influences of fear and fatigue.
>
> The use of acid drinks, if cholera is threatening, should be prescribed. This is for the purpose of acidifying the stomach and its contents, which are always alkaline except when digestion is in progress. Acids are antagonistic, alkalies favorable. to the development of bacteria. If the stomach be kept reasonably acid by pure dilute acids all bacteria will be destroyed before reaching the intestines, which are always alkaline in health. Diluted or aromatic sulphuric acid, acetic acid or good vinegar, lemon or lime juice, are suitable agents to employ. Hydrochloric acid is also useful. This acid is always more freely secreted when the gastric membrane is stimulated by the presence of salt; hence salt meat is an excellent article of diet during the prevalence of cholera.
>
> Moreover, all arrangements should be made for the isolation and treatment of a first and succeeding cases should they unfortunately occur.
>
> Second. When a case of cholera appears it should be promptly isolated and all unnecessary contact with outside people be prevented. The patient or patients should have a nurse to wait upon them exclusively. When cases occur in quarters other than barracks they should be isolated in the special cholera hospital; but if treated in quarters all absorbent articles of furniture, such as carpets, cushioned articles and hangings, should be immediately removed from the apartment.
>
> All cases of premonitory diarrhea should be detected by careful inspection and treated immediately; and full instructions should be given regarding food, drink, and the disinfection of excreta.
>
> With the exceptions of fruits that are protected by an outer rind no articl food should be eaten that has not been subjected to a boiling heat in its prepar

for the table; and all vessels used for the cooking, serving, or storage of food should be soaked in boiling water prior to being used.

All water for potable use should be boiled before use, if not received directly from a condenser; and it is well to acidify it as before stated.

As the infection resides in the stools, all discharges should be received into a vessel containing a disinfectant; soiled bed linen and clothing should be steeped in a solution of corrosive sublimate or chloride of lime before being removed from the ward or sick chamber. The floor and furniture when tainted in any way should be immediately washed with one of the solutions mentioned; the person of the patient sponged when necessary with a dilution of chlorinated soda; and the ward or sick room, as in all infectious diseases, should be freely ventilated.

As the disease is propagated chiefly by the introduction of its infection in connection with food or drink, care should be exercised by attendants and others in purifying the hands after contact with infected articles, particularly before eating: and obviously no food or drink should be used in the ward or room save by the cholera patients.

Boiling in water may be relied upon to purify articles of body clothing and bed linen that have been infected by the discharges from the bowels. All infected articles must of course be kept separate from the general wash. Solutions of corrosive sublimate, 1 drachm to the gallon of water, chlorinated lime, 1 ounce to the gallon, solution of chlorinated soda diluted with nine volumes of water, and carbolic acid in a 2 per cent solution, are efficient disinfectants. They may be used for soaking soiled linen before sending it to the laundry, and for washing the floors, woodwork, and walls of the room. They may also be used for the hands, and, with the exception of the sublimate solution, for general personal use. Stronger solutions of these disinfectants or of sulphate of iron should be employed for the treatment of excreta or for saturating the sheets in which a dead body is enveloped pending arrangements for burial. A suitable strength is obtained by dissolving 2 drachms of corrosive sublimate or 4 ounces of chlorinated lime in a gallon of water, or by making a 5 per cent solution of carbolic acid. Any of these should be added in volume equal to that of the material to be disinfected. The disinfectant should be permitted to act on excreta for an hour, after which the contents of the vessel may be disposed of, preferably by burial. As contact with metals decomposes the sublimate solution, it should be used only in earthenware or other suitable vessels.

Privy vaults or cesspools that have become infected by the addition of discharges direct from a patient, must be treated liberally with chlorinated lime, sulphate of iron, or strong solutions of sublimate or carbolic acid.

A dry or oven heat of 230° F., continued for two hours, or an exposure to superheated steam, 25 pounds pressure, for one hour, is useful for dealing with infected garments.

Temporary treatment until a medical officer is called in should consist of applications of mustard on the abdomen with warmth to the body and feet, and hot brandy punch in small and repeated doses, the diet to consist of well-boiled rice and milk; and if the discharges continue, laudanum, thirty drops, should be given two or three times with the brandy. The medicine recommended and generally used in India is a mild carminative consisting of one part of opium, two of asafetida, and three of black pepper, made into 5-grain pills, which is said when taken early to have checked the disease in thousands of cases.

If the post becomes thoroughly infected, security can be obtained only by abandoning the dangerous locality. Troops that have fallen back before the advance of the disease have often escaped seizure, or escaped further disease if withdrawn subsequent to the time of their attack. A temporary abandonment of the infected locality is therefore recommended if there is ground available for occupancy.

Fortunately, however, the imminence of the danger subsided by the gradual extinction of the disease at the quarantine of the port of New York, and it became evident that several months would probably elapse before similar threatening conditions would recur. Influenced by the circular from this office medical directors on the return of warm weather again notified their subordinates of the importance of giving special attention to local sanitary conditions. The following, issued by Lieut. Col. D. Bache, Medical Director, Department of the Platte, illustrates the action taken by post surgeons.

In view of the importance of an early renewal of activity in the sanitary preparation of posts for the coming summer your attention is called to the value of the inspections made under Paragraph 1642, Army Regulations, and to the direct advi-
y responsibility which is there placed upon the medical officer. This responsi-
ty is not discharged by a single formal inspection and monthly report, but may

require a repeated representation of sanitary defects and remedies. This vigilance is not wasted even when not confronted by some epidemic emergency, for the statistics of a post may be expected to show the diminution of all serious disease ratios in direct response to a thoughtful and sustained effort in sanitary improvement.

Dengue.—The only posts from which this fever was reported were Forts McIntosh and Sam Houston, Tex., where 43 and 21 cases, respectively, were said to have occurred.

Diphtheria.—Eleven cases were reported among enlisted men, 6 at Fort Grant, Ariz., and 1 at each of five other posts. This disease appeared among the children at certain posts. At Forts Hancock, Tex., and Stanton, N. Mex., 1 case each; at Fort DuChesne, Utah, 4—1 fatal; at Fort Yates, N. Dak., 8—1 fatal; and at West Point, N. Y., 9—5 fatal. Eight of the cases at the last-mentioned post, and all of the fatal ones, occurred in the family of Mr. F. P. Baily, quartermaster's employé. In all these instances isolation and disinfection were carefully employed to limit the spread of the disease. The house occupied by Mr. Baily was destroyed by fire together with two tents and some articles of equipage belonging to the Quartermaster's Department that had been used in connection with the treatment of the cases.

FORT YATES, N. DAK.—*Lieut. E. L. Swift.* The disease seems to have been brought into the post by a visitor (a woman) who contracted it while traveling to the post. This person stopped to take lunch at a way station where there was a child sick with sore throat. Three or four days after this this initial case broke out, followed by two other cases (children) in the same house. These latter two children, after running through the course of the disease and recovering, had a relapse of the membranous exudation. Nearly all of the cases have been marked by extensive exudation, and one malignant case occurred in a child 5 years old. The latter was the only death. One child had abscess of right cervical glands, and one had paresis of external recti, soft palate, right arm, muscles at back of shoulder and those of both legs. The former has recovered from the abscess (after opening) and the latter is slowly recovering from the paresis. One child, 13 years old, had marked cardiac weakness for ten days after convalescence. The febrile movement varied in different cases and was quite high in the adults. The latter class of cases was of a mild form, a high fever, lasting two days, and then rapid peeling of exudation and convalescence.

The most complete isolation has been resorted to wherever the disease existed and the post school closed. Hospital Corps nurses were not allowed to go among the other men. Sulphur fumigation of houses, thorough cleaning and rekalsomining were resorted to under direction of a medical officer. Mattresses, pillows and comforters were destroyed by fire; articles of clothing disinfected with sublimate or chloride of lime solutions or destroyed by fire. Every unnecessary article was removed from sick room. The treatment consisted of whisky and digitalis when required, of lime-water spray in sick room, of the most thorough circulation of fresh air through sick room, of half hourly spraying of throat with peroxide of hydrogen. In some cases where there was much pharyngeal mucus, a chlorate of potash gargle every hour was ordered. In a case where the membrane extended to nasal cavity, that was syringed out with peroxide every half hour.

The results were satisfactory in most cases. Peroxide seems to have a marked influence in controlling the spread of the exudation; in one case where it was not at first resorted to the membrane spread with great rapidity and filled the nasal cavity. This latter case was, with the exception of the malignant case, the severest one we had, and was followed by the paretic sequelæ. In the malignant case very little was done, as the child struggled and fought with fury at any interference. It completely exhausted itself by its furious exertion after each dose of medicine, so treatment had to be discontinued.

Enteric fever.—Of this fever, including cases reported as typho-malarial, 151 cases occurred among the enlisted men of the Army, 149 (of which 13 were fatal) among the white and 2 (1 fatal) among the colored troops. A relative insusceptibility to this disease might be suggested by these figures but for the fact that the average annual rates of admission for the past ten years have been 4.34 for the colored as compared with 7.58 for the white troops. Gleanings from larger fields might therefore show a greater equalization of the rates.

The 151 cases were distributed among forty-seven posts. The largest number, 23, was reported from Fort Reno, Okla., but Madison Barracks, N. Y., had 19, Fort Leavenworth, Kans., 12, San Carlos, Ariz., 10, Fort Yates, N. Dak., 8, Fort Monroe, Va., 6, and Fort Sherman, Idaho, 5; four posts had 4 each, four 3 each, eight 2 each, and twenty-four 1 each. The fatal cases were scattered at various posts, one each, except at Fort Sill, where two of three cases were fatal.

Capt. Gorgas, on duty at Fort Reno, attributed most of the cases that occurred at his post to the use of a polluted well water. The well had been condemned by several of his predecessors, and urgent calls had been made by them and their superiors in the Medical Department for the introduction of Caddo Spring water to the exclusion of the well and river waters generally used. Several wells had already been closed and the use of this, the last of them, was prohibited by the commanding officer on receipt of Capt. Gorgas's report. It can not be said, however, that the true nature of these febrile cases at Fort Reno has been made out satisfactorily, as there was but one death and no record of post-mortem examination was furnished. Some of them were probably cases of adynamic remittent. Reference is made in this connection to the report of Capt. J. C. Merrill, submitted below (p. 59). Capt. Gorgas's report is as follows:

> I have investigated 29 cases of typhoid fever that have occurred at this post since January 1, 1890, these being all that I could get any information about, either from the records or from personal questioning. Of these, 26 occurred among the enlisted men, 2 in the families of enlisted men, and 1 in the family of an officer.
>
> The disease seems to have been fairly equally distributed among the organizations of the post, B, Fifth Cavalry, having had 7; C, 4; E, 4; G, 2; K, 5, and the band 1; G, Tenth Infantry, 1, and G, Thirteenth Infantry, 2.
>
> As to length of time continuously at post before attack, 13 had been at post for twenty days or more, in 10 no information could be obtained on this point, and 3 had been at the post less than twenty days. Of the 3 less than twenty days 1 had been in from the field twelve days, 1 was taken sick in field after a service of several weeks, and 1 was seventeen days out from St. Louis. This is probably a fair average, and indicates that about four-fifths of the cases are due to local causes about the post, and one-fifth were contracted elsewhere.
>
> The principal source of drinking water for the enlisted men during the summer is from a well in the southwest corner of the post, this water being clear, palatable, and cool. Some water is used from the supply piped about the post from the river. This applies more particularly to the past and to the summer season. At present water is supplied from Caddo Springs for drinking purposes, and all the men questioned agree in saying that this Caddo water is drunk almost exclusively.
>
> As to the water supply of the typhoid fever cases, 26 of the 29 cases occurred among that class of the population, the enlisted men, which drank almost entirely well water. The 2 cases in the families of enlisted men, a young girl about 19 and a boy of 12, both drank well water frequently. The girl tells me that she often drank well water when away from home, though at home they generally used Caddo water. The boy habitually drank well water while playing and exercising about the post. The case in the officer's family was that of a boy 18 or 19. The family were careful to drink none but Caddo water, but the young man hunted a great deal, and no doubt drank a great deal of bad water on these expeditions, and while in the post probably drank well water, as was usual on target range, baseball grounds, etc. I have not been able to question him personally on this subject.
>
> In the town of El Reno, 6 miles off, which is supplied by local wells, there seems to have been very little typhoid fever. The two leading physicians tell me that they have not seen a case in the past year in the town, and only 2 cases in the surrounding country.
>
> I think from this not very complete analysis of the cases that it is a fair presumption that most of the cases were contracted at the post, and that from its being so generally disseminated it is not due to infection of any building or locality.
>
> Looking at the water supply, no reasonable suspicion can rest upon the Caddo water. That class of the population, officers' families, which drank this water exclusively, escaped entirely, and that class which drank little or none, enlisted men, uffered most.

The river water, though not so free from suspicion as the Caddo water, I do not believe to be the source of infection. The class which probably drank river water most, families of enlisted men, did not suffer most, and the 3 cases occurring in this class can as well be attributed to other sources. Officers and their families drank no river water, and the enlisted men very little. Nor could we expect a considerable stream flowing through an uninhabited country to become contaminated with the typhoid germ.

The only remaining source of supply is the well in the southwest corner of the post. Eight-ninths of the cases investigated were from the class of the population which drank water principally from this well. In round numbers, 350 used this well principally, and 200, other water most of the time. Twenty-six of the cases investigated were from the 350 well users, 3 from the 200 of the other class. Two of these three drank frequently well water, though it was not their principal source of drinking water. It is but fair to state that there is considerable prejudice in the post in favor of this well. The water is clear, cool, and palatable. Many of the men have used it for several years with no bad effects, and one family of eight have always used it exclusively without any trouble.

Madison Barracks, N. Y., garrisoned by six companies of infantry, is on the shore of Black River Bay, immediately above the town of Sackets Harbor, N. Y., about 3 miles from Lake Ontario. The bay is about a mile broad opposite the post, and on the river above this situation are a number of sawmills and pulp mills, and the towns of Watertown, with 15,000 population; Carthage, 4,000; Dexter, 1,500; Black River, Brownsville, and other small settlements.

At the time of its invasion by typhoid fever the barracks were rather crowded and the plumbing and sewers in bad condition. The latter emptied into the bay a short distance above the intake of the water supply, and at the time, as a measure of sanitary precaution, the extension of the intake further into the bay was under consideration. An improved sewerage system was also in progress with an outfall, along with the main from Sackets Harbor, into the mouth of Mill Creek, a short distance above the present outfall. A sporadic case of typhoid fever had been occasionally recorded in the medical history of the post, but in no instance until the late outbreak had there been any spread of the disease.

The first case occurred in the person of a recruit, who was suffering from fever on his arrival, September 18, from Binghamton, N. Y., where he had been enlisted. The second was developed a month later, October 18, and from this time until December 13, when the last case occurred, there were 25 more cases, making 27 in all—1 officer, 20 enlisted men,* 1 female servant, and 5 children. Two of the cases proved fatal.

From a careful consideration of the attending circumstances it is probable that the spread of the disease was due to infection from the first case, discharged through the sewers into the bay from which the water supply was derived. The cases were scattered over the post, so that defective ventilation or other insanitary conditions of certain buildings, the milk supply from various sources, and transmission by personal contact, were readily eliminated from the list of possible causes. The restrictive measures adopted were isolation in quarters or removal to hospital, disinfection of soiled linen before washing, and of discharges before consigning them to the sewers, and the disuse of the suspected water supply. The drinking water was boiled before being used until a new supply was obtained from Henderson Bay and a well so situated as to be free from contamination by surface drainage.

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*These figures do not agree with the statistics as given above and in the tables in the appendix, because they represent the facts at the date of the report, while the tabulated statistics include only the cases completed during the calendar year 1892.

Two hospital tents were floored and framed to extend the hospital accommodations of the post.

The improved sanitary condition of our military posts has rendered such local epidemics of rare occurrence. Formerly they were not uncommon, more or less associated with remittent fevers, and constituting what were then called typho-malarial fevers; but their development has latterly been suppressed by sewerage and water supply. With an efficient sewerage system and an adequate supply of wholesome water it is safe to say that Madison Barracks would have had no local spread from the introduction of a case of typhoid fever.

The report of Lieut. Col. Sternberg on this outbreak is herewith submitted:

The distribution of the cases in various parts of the garrison shows that they bear no immediate relation to each other as regards infection, but that all must have contracted the disease from a common source of infection. The only apparent common source of infection is the water supply. The facts shortly to be referred to fully justify the opinion that this outbreak is due to contamination of the water supply of the post with the excreta of typhoid cases.

A careful inquiry with reference to the milk supply shows that the different companies of the garrison obtain milk from three different sources, and there is no evidence that any cases of typhoid fever have occurred in the families of those who supply the milk or among the families of some of the officers of the garrison who have used it freely. B, C, F and G companies obtain milk from a man (Leffer) living 500 yards from the Government reservation. B company has had 4 cases of typhoid fever, C company 4 cases, F company a single case, and G company 4 cases. E company, which obtains milk from another source, has had 2 cases, and D company, which obtains milk from Mr. Lansdale, a farmer living 2 miles in the country, has had 3 cases.

Again, I am unable to ascribe the outbreak to defects in the system of sewers at the post, although this has not heretofore been satisfactory and is now being improved; for the construction of the barracks and the arrangement of the water closets and sewer connections are such that sewer gas can not very well find its way to the dormitories of the men, and some of the cases have occurred at a distance from any sewer connection, *e. g.*, case No. 8, which occurred at the quartermaster's stable.

The present water supply of the post is obtained from Black River Bay by an intake well, located about 30 feet from the shore and about 500 feet from the point where the sewer from the post hospital discharges into the bay. This supply has been in use since 1882. In view of the fact that the first case during the present outbreak was an imported one—a recruit who had only been three days at the post when taken sick—that the excreta of this man were thrown into the hospital water closet and must have been discharged into the bay through the old drain (since closed), and that the outbreak among those using the water thus liable to contamination occurred after an interval of twenty-two days and has continued up to the present time, it seems to me extremely probable that this epidemic is due to contamination of the water supply by typhoid bacilli which developed in the hospital sewer or in the water of the bay from germs contained in the excreta of case No. 1.

I am informed by Assistant Surgeon Merriwether, U. S. Army, who was acting post surgeon at the time this first case occurred, that he directed the disinfection of all excreta from this case as soon as the diagnosis was made. But it is hardly probable that this measure was carried out so promptly as to make it certain that no living typhoid bacilli escaped into the hospital sewer. While the explanation offered appears to me to be the most probable one, it is also possible that the epidemic resulted from contamination of the water of Black River Bay and the water supply of the post by typhoid bacilli contained in the sewage of towns located upon Black River, a stream of considerable size, which empties into the bay. The sewage of Watertown, a town of 15,000 inhabitants, and of several smaller places, is discharged into the Black River. Watertown is about 10 miles distant from Madison Barracks.

There has been no considerable epidemic of typhoid fever at Watertown, but I am informed that cases of the disease occurred there during the months of September and October. I am informed by Dr. Lord, of Sackets Harbor, that there has been no prevalence of typhoid fever in that town this year, and that the inhabitants of the own do not use the water of the Black River Bay for drinking purposes, but obtain their supply from wells. Dr. Lord also informs me that he has had cases of typhoid ver this fall in families living on the other side of Black River Bay, opposite Madison Barracks, and that these families use the water of the bay for drinking purposes. After careful consideration of all the facts I am convinced that, while the new intake well, not yet in use, presents less danger than the old one, it is unsafe to use water from this locality or from any part of Black River Bay for drinking purposes. The same objection does not exist against the water of Henderson Bay, which is a portion of the lake into which no stream of water empties and upon the shores of which there are no towns or factories to pollute the water. I visited the shores of this bay in company with Maj. Caldwell, post surgeon, and Capt. Thompson, assistant quartermaster, and am convinced that this is the nearest practicable point for obtaining a satisfactory water supply for Madison Barracks.

According to an indorsement by Assistant Surgeon Merriwether on a communication to the Surgeon-General from W. M. Mew, chemist, (dated Surgeon-General's Office, Washington, September 23, 1892), "immediately you cross the bar between Horse Island and the main land into Henderson Bay you get into clear water. The approximate distance from the pump-house to the shore by way of Ogden and Ambrose streets, thence 1,000 feet northwest is 10,100 feet." At this point, I am informed by Capt. Thompson, assistant quartermaster, there is a depth of water of about 32 feet. The report of Dr. Wm. M. Mew, chemist, attached to the communication above referred to, shows that the water of Henderson Bay is unobjectionable so far as a chemical analysis can determine the matter. The same is true of the water of Black River Bay obtained from the vicinity of the new intake well. But it would be extremely unsafe to rely upon a chemical analysis, upon supposed currents or prevailing winds, in view of the fact stated by Dr. Merriweather in his indorsement above referred to. "As I stated in a former communication, the crib proposed is 450 feet from the shore, and is directly in position to receive the sewage from the post flowing outward into the lake."

While making my inspection at Madison Barracks I obtained samples of water from the present supply, and have commenced a bacteriological examination, the results of which will be embodied in a subsequent report. But I may say in advance that a negative result, so far as the presence of the typhoid bacillus or other pathogenic bacteria is concerned, will in no way change my opinion as to the danger of habitually using water from this source for drinking purposes.

The occurrence of an epidemic of typhoid fever or cholera at Watertown under such circumstances might be disastrous to the garrison of Madison Barracks. That the present epidemic has not been more extensive and fatal in its results is no doubt due to the prompt measures taken by the post commander, under the advice of the post surgeon, for preventing the use of the contaminated water of the bay and improving the general sanitary condition of the post. Early in the epidemic the recommendation was made that the water should be boiled before it was used for drinking purposes, and facilities were provided for storing boiled water in convenient localities at the company barracks. But as the unboiled water was easily obtainable, it is probable that the enlisted men of the garrison not infrequently made use of this, notwithstanding the orders to the contrary. Recently water for drinking purposes has been procured from a well located at some distance from the post on high ground, and with surroundings which seem to preclude the possibility of contamination by surface drainage.

The comparative immunity of the officers of the garrison and the members of their families is perhaps due to greater care with reference to the use of boiled water and the better sanitary surroundings.

The enlisted men on duty at the time of my inspection generally presented a healthy appearance, and were evidently well fed and well cared for, so far as was within the power of their officers. But the barracks in which they are quartered are overcrowded and do not comply with modern sanitary requirements. The number of men in each company barrack, and the cubic air space for each, is shown in the following table:

Company.	Number of men.	Cubic air space.
		Cubic feet.
B	36	585
C	41	606
D	37	627
E	35	568
F	42	621
G	38	624

The dormitories are in the second story of the barrack buildings. They are provided with ridge ventilators, which, if always open, and with a proper inlet below by way of the stairway and open windows in the first story, would probably sea sufficient supply of fresh air. But during cold weather the ventilators have not always been kept open, and owing to the overcrowding of the barracks it is probable that the men have suffered to some extent from defective ventilation of their dormitories. This may have been sufficient to act as a predisposing cause to infection and to account for the fact that the cases which have occurred in the garrison have been for the most part among the enlisted men occupying these dormitories. As a remedy for defective ventilation pieces of boards have recently been placed under the lower sashes of all the windows in the dormitories to allow the entrance of fresh air through the space thus left at the junction of the upper and lower sashes. This will answer as a temporary expedient, but in cold weather, with high winds, those sleeping near the windows will be apt to suffer from the draft of cold air. In my opinion not more than 25 men should be quartered in each of these dormitories. The water-closets now in use at the company quarters are not satisfactory, and estimates have been made for new ones. This is a desirable sanitary improvement, although I am not disposed to believe that the present arrangement is in any way responsible for the recent outbreak of typhoid fever.

The bathing facilities for the enlisted men of the garrison are very inadequate, but I am informed that estimates have already been made for increased facilities and more conveniently and comfortably arranged bathrooms. A new system of sewers is also being introduced and is partly completed. At present the sewer in rear of the officers' quarters and of the barracks occupied by Companies C, G and F is a roughly-made stone drain; "the cement has become rotten and has fallen out of the crevices, making it impossible to flush properly or to keep clean." The old drain from the hospital is no longer in use, but a connection has been made with the new system of sewers now in construction.

Supplementary report.—At the time of my visit to Madison Barracks (December 6) I commenced a bacteriological examination of the water supply. I had taken with me for the purpose a supply of test tubes containing sterilized "nutrient gelatin." A measured quantity of water (1 c. c.) from the general supply, obtained from a tap at the post hospital and from B company's quarters, was added to the liquefied gelatin in a number of these tubes and Esmarch roll tubes were made at once.

It has been shown by repeated experiments that the only way to obtain a correct estimate of the number of bacteria in a water supply is to make plates or roll tubes as soon as possible after the collection of the water, for if kept for twenty-four hours or more there is usually a very considerable increase in the number of bacteria as shown by the number of colonies which develop on such plates. Upon examining, at the Hoagland Laboratory, the roll tubes made at Madison Barracks after an interval of five days, the average number of colonies which had developed was found to be 125 per cubic centimeter. This is not in excess of the number which may usually be obtained from drinking water of good quality. The very much larger number found in the bacteriological examination made at the University of Pennsylvania, as per report dated Laboratory of Hygiene, University of Pennsylvania, November 21, 1892, (3,300, 3,700, and 4,500 per c. c. in the three samples examined) was doubtless due to the fact that some time had elapsed after collecting the water in bottles before the bacteriological examination was made, and that a large increase in the number of bacteria had occurred between the date of collection and of examination by bacteriological methods. A careful examination of the colonies which developed in my Esmarch roll tubes failed to disclose the presence of the typhoid bacillus or of any bacillus closely resembling it in morphology and characters of growth. The micro-organisms found in greatest abundance were a small nonliquefying micrococcus and bacillus subtilis—several other species of common water bacteria were isolated, but no known pathogenic species was found. The bacteriological examination, therefore, corresponds with the chemical examinations made by Dr. Mew in failing to show any contamination which would justify a condemnation of the water supply at Madison Barracks.

But, in view of the liability to contamination by the sewage of the post and of towns upon Black River, and the recent outbreak of typhoid fever, I do not hesitate to reiterate the opinion already given, and to affirm my belief, that it is unsafe to use the water of Black River Bay for drinking purposes.

Appendix.—At the time of my visit to Madison Barracks I collected specimens of water from the "tap" at the post hospital and at B Company's quarters in sterilized glass flasks ("Sternberg's bulbs"), which were hermetically sealed. Upon my return to New York, forty-eight hours after collection, I added 1 c. c. of this water to liquefied flesh pepton-gelatin, in several test tubes, and made Esmarch roll tubes. At the end of four days, at 22° C., a large number of colonies had developed in these roll tubes, averaging more than 3,000 per c. c. of the water, showing an increase in the number of bacteria during the time the water had been kept after collection of more than 2,800 per c. c.

This illustrates very well the fact referred to in my supplementary report, viz., that the number of bacteria found in water which has been kept for a day or two is not reliable test of the potability of a water supply.

Naturally the number will be greater in water which contains a considerable amount of organic matter to serve as pabulum for the germs present; but the amount of organic matter can be more accurately estimated by a chemical analysis, and the bacteriological analysis is chiefly valuable for determining the presence or absence of known pathogenic bacteria. Of course, a negative result only shows the absence of such pathogenic bacteria in a small quantity of water, collected on a particular date, and can not be taken as evidence that the water is not, or has not been, at some previous date contaminated with such "germs."

During the latter part of the fiscal year three cases of typhoid fever occurred among the fifteen men stationed at Kennebec Arsenal, Augusta, Me. Capt. M. W. Wood was sent from Fort Preble, Me., to investigate the causes of this outbreak and suggest measures for preventing its spread. He attributed the disease to the sewage-polluted water supply from the Kennebec River, considering that the outbreak at the post was merely its participation in the febrile attacks common in the city from the same cause, and proposed the substitution of a spring water-supply, which was approved by this office after a careful examination of the water. The change in the water supply is now in progress. Capt. Wood's report is as follows:

* * * In the quarters of the single men there was found in the cellar a pipe leading direct, untrapped, to the sewer, which formerly took the waste from the bath tub. When the tub was removed to another room the opening in the pipe was not stopped. This had been the case since 1889. The cellar itself has a dirt floor, is damp and foul. The down spouts all lead direct, untrapped, to the sewer. The soil pipe from closets, etc., has no trap disconnecting it from the sewer. This, together with the present method of heating the quarters, with stoves, which in extreme cold weather is hardly adequate to do it properly, obliging the windows to be kept shut tight and preventing proper ventilation, * * * In quarters No. 1, those of the commanding officer, two openings were found in the cellar, leading direct to the sewer, untrapped. * * * In the same cellar was found a soil pipe that had formerly been used to carry off the waste from a washtub, etc. These fixtures being removed, the opening over which they had been placed was left untrapped until recently, when its existence was discovered. * * * The cellar floors of most of the buildings are laid on the ground and are rotten and should be taken up and replaced by concrete. The cellar under the room used as a ward of the hospital has simply a dirt floor, damp and foul with decaying vegetation. * * *

The water supply of the post is from the mains of the city of Augusta on the opposite side of the river, and the source is the Kennebec River. * * * Augusta alone of all the large towns on the Kennebec River uses this great sewer as the source of nearly all of its water supply. There are, however, two other sources for part of the city, known as the Devine Springs and the Vickery Springs. The latter named supply only the twenty to twenty-five families who are tenants of the Vickery houses. The Devine Springs are the property of the Augusta Water Company, who charge $10 per tap for this "pure, wholesome water," while they charge but $8 for the Kennebec River water. These springs consist of fifteen catch basins communicating with a common outflow, and are built over springs in a pasture to the west of the city. * * * The largest is an earthen-walled reservoir, over which stands a tumble-down frame shelter. It is a foul appearing place, containing about 2 feet in depth of water, which is bluish, opalescent, almost milky, covered with a foul scum. The bottom is a slimy, clayey mud, and in and upon the water are decaying boards and timber enough to cover half its surface. The earth walls have caved in in several places The water from these foul sources, when drawn from a tap in the city, has the physical characters of a pure water as compared with the Kennebec River water, and notwithstanding its higher price, is used by many because of its reputed wholesomeness. It appears to be a fact that those who confine themselves to this water, and do not contaminate it with Kennebec River ice, have no typhoid fever. The supply of Kennebec River water is received through a pipe laid on the bed of the river just above the dam in front of the city. Through this pipe the water flows by gravity to the filter in the pump house, and is then pumped, under a pressure of 125 pounds to the square inch, to a large reservoir on a hill to the westward from the city, at an elevation of 290 feet above the principal street of the city. From this reservoir it is distributed by gravity.

The water in mass, before filtration, is very dark, almost coffee-colored, and contains much visible suspended matters. It appears more transparent in the city reservoir, which I inspected, but this must be due to the removal of suspended matters, though it still contains much of these as drawn from taps in the city and at the arsenal. The reservoir appeared to be very clean, and the stones beneath the surface of the water were not at all slimy. The filters (two), which are used singly, alternately, are the S. D. Warren filters, each 8 feet 1¼ inches in diameter. On the day when I visited the water works the pumps were raising 142,140 gallons per hour, or about 19 gallons per hour for each square inch of filter surface—rather more than this if we deduct the area of a section of the shaft which passes vertically through the center of the filter. This shaft has projecting horizontal arms, which churn up the filtering material so as to allow the water to pass more rapidly. Though the effect of the filter must, at best, be slight, so enormous is the quantity passed that the contents of the filter appeared to be a foul, dark mass of liquid.

These filters are ostensibly cleaned periodically by stopping the outflow, introducing a quantity of water above them, churning up the filter, and then drawing off a portion of the supernatant liquid, now no longer properly called water.

The principal sources of the water of the river are a number of lakes (or ponds, as lakes are generally called in Maine), which for the greater part are surrounded by dense forests, and the water of many of these is dark and in appearance like swamp water. There are other sources to which much of this color may be due. The river throughout nearly its whole length is a great highway for logs for the lumber trade and the wood-pulp mills, and the hundreds of thousands of these, during the attrition to which they are almost constantly subjected, must yield up coloring matter from their bark. The thousands of tons of sawdust, too, which are annually poured into the river can only have the effect of increasing the amount of its color. The refuse liquor from the digesters of the wood-pulp manufacture, and which is a very dark liquid, adds its quota to the color. A superintendent of one of these establishments, describing this liquor to me before I had seen any of it, said that it had the appearance of Porto Rico molasses. Four tons of sulphur are used daily, with 100 barrels of lime, in the production of sulphite of lime, which, by its action in the digesters, for a period of five hours at a temperature of 220° F. upon the fine shavings of spruce, produces this molasses-like liquor as a waste product, which is discharged into the river. A small quantity of this suffices to darken, perceptibly, a large quantity of water, as may easily be determined by experiment. * * *

Maine has the usual laws for the compulsory notification of infectious diseases, including typhoid fever, but the great practical bearing of the observance of such laws has evidently not been sufficiently inculcated, and it is but too evident that the statistics will not show the facts.

The health officer for the year prior to March 26, 1893, after a careful consultation of his records, informed me that 45 cases of typhoid had been reported to him in his year of service, and his successor has had 7 cases reported since.

One physician told me that he and his associate had had 28 cases of typhoid fever during the winter and spring, which were not reported, and another, who was city physician from March, 1892, to March, 1893, informed me that he alone had had 22 cases of undoubted typhoid fever since February 1, 1893, all having characteristic symptoms, all among people who used Kennebec River water, and that none of these cases had been reported. He said that the epidemic broke out immediately after a thaw and rains, which flushed the sewers and drains of Waterville, where there had been 4 cases during the winter.

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The valley of the Kennebec is well populated, and towns of varying size are on both its shores. Above Augusta, at a distance of 10 miles, are Vassalboro on the east bank and Sidney on the west, with a population of 2,052 and 1,334, respectively. Eight miles farther up are also two towns, Winslow on the east, with 853, and Waterville on the west, with 7,107. The latter town is tolerably well sewered, and the sewers discharge into the Kennebec. Two miles farther up is Fairfield, on the west bank, with 3,510, and 3 miles farther up is Benton, on the east bank, with 1,136. * * * Bad as is this showing, it is not all. Two wards, 4 and 7 of the city of Augusta, and a considerable portion of ward 3, with a population of 2,800 to 3,000 or more, and among whom a large proportion of this city's cases of typhoid fever has occurred, and where much of its filth and bad sanitation is found, lie above the intake, many of the people living in houses which are at an elevation of 75 to 100 feet above the river. The shore of the river along the front of this section is dirty and foul smelling, littered with sawdust deposited by the high water, and with garbage and other rubbish.

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It seems quite certain that no artificial filtration, and certainly not the system in use, can extract pure, wholesome water from this solution of various substances used as the source of supply for the capital city of this State.

* * * The solution of the problem of the water supply of Augusta is impeded by the vested interests of the water-works company, and although an abundant supply of apparently pure, uncontaminated water can easily be found within

miles of the pump house, involving only the expense of constructing gravity pipes to the source, it is doubtful whether the dollars and cents represented by the present company will soon be overcome.

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The post of Kennebec Arsenal had at one time a tolerably elaborate system of springs, catch-basins, cisterns and connecting conduits, but the most obvious indications were ignored, and well known laws of sanitary engineering were violated. No adequate measures were taken to secure the outflow of the springs free from seepage in the catch-basins, which were not constructed in such manner as to secure their permanence. No adequate measures were taken to prevent surface water from entering the catch-basins nor to secure them from accidental or mischievous contamination by solid matters, such as drowned animals.

The conduits, in some instances of improper materials, were not properly laid nor kept in repair. The cisterns were not properly cleaned and kept clean. They were not secured from accidental or mischievous pollution. The system did not furnish sufficient quantity or pressure for fire purposes, and it is therefore not to be wondered at that a commanding officer should recommend a general introduction of water from the Augusta water pipes or its general use after introduction. An inspection of the various springs, some of which are but "wet weather" springs, showed one with a bottom partly covered with solid rock, which spring has a history of permanence. Being unused and unprotected it was of course neglected, and contained a quantity of leaves and other rubbish which had blown or fallen into it. But it contained bright, clear, transparent water, without taste or odor, for it was flowing perhaps 1,000 gallons per day. The prospect was a promising one. It was emptied, excavated to an additional depth in that portion of the bottom floored by earth, which was found to be a heavy clay containing gravel, and also containing some seepage water. But the main supply was found to come clear, cold, and sparkling from the clefts of the bedrock. The excavation completed, the floor and circular wall of the catch basin were scrubbed with a new scrubbing brush and clean water, then carefully rinsed with clean water and emptied; then scrubbed with a strong solution of permanganate of potash, carefully rinsed and emptied; then again carefully scrubbed with clean water, rinsed and emptied; and now the yield of the spring was found after a prolonged test, to be at the rate of 1,535 gallons per day, and with the catch-basin full its temperature was found to be 44° F. at 11 a. m., May 31. It was allowed to fill and discharge over night, then emptied and called clean, and on its refilling a sample of one gallon was collected and sent to the Surgeon-General's Office for analysis and examination. The conduit from this spring to the system of (formerly) connected cisterns was found to be unglazed drain tile, which was laid in a ravine and broken in several places.

The measures necessary to be taken for the utilization of this source of supply and its conduction to the cistern reservoir (to be described) were discussed with Maj. McGinniss, and the execution of the work in a proper manner may safely be left to him. The cistern reservoir consists of a once fairly well constructed series of four nearly cubical chambers communicating by pipes and separated by substantial partitions, with a large manhole in each partition, so that when emptied the Major and I were able to pass through the series and personally inspect the floors, roofs, and sides. The capacity of the cistern as a whole to the overflow pipe, after deducting the obstructions and the rectangular brick pier in the center of each chamber, which supports the arched roof, was found to be over 31,200 gallons.

Though somewhat out of repair, and unprovided with means for securing the manhole in the roof of each, so as to prevent contamination of the water and still permit its inspection, they can readily be repaired, cleansed, as was the spring catch-basin, properly connected with the spring, and then, if the spring water be found pure and wholesome, they will furnish a supply of pure water cold enough to need no ice, sufficient for a much larger command than the present garrison, for use for all purposes of conveying water to the stomach, and at the same time provide for the maintenance of a constant reserve sufficient to tide over any probable prolonged drought.

It has happened on several occasions in the experience of Army medical officers that typhoid fever has appeared in a command when the most searching investigation has failed to discover any unusual insanitary condition except a want of ventilation under the floors of the buildings in which the outbreaks occurred with rotting of the flooring and dampness and organic decay underneath. The last instance of the kind published was the occurrence of 23 cases at Fort Assinniboine, Mont., in 1889.* An earlier experience of the same kind, published in Part III, medical volume of the Medical and Surgical History of the War, p. 497, was reported in 1873 by Capt. McElderry from Fort Klamath, Oreg. During the past year a similar occurrence took place at Fort Yates, N. Dak. Although the insanitary conditions at this post included a contamination of the surrounding soil by disused privy pits filled in and covered over when the earth closets now in use were erected, the unventilated site and decayed flooring of the barracks are worthy of special notice in view of the above-mentioned experiences. Capt. A. R. Chapin reported from Fort Yates that—

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*See report of Surgeon-General, 1890, p. 29.

> During the past three years while I have been post surgeon the first case and the majority of all the cases of typhoid fever have come from F Troop, Eighth Cavalry. In the effort to find and eradicate any possible cause my attention was, among other things, called to the floors of the cavalry barracks. While perhaps hardly probable that in their condition is to be found the cause of this disease, they are in a very insanitary condition—worn half through. In many places they are filled with large cracks and rough places from which it is impossible to remove the dirt. The dormitory floors are in such condition that a very little water put on them will run through and drop into the room below. Besides this, I am informed on good authority that the room now used as dining room by Troop F was, by a troop formerly occupying this barrack, used as a wash room and the water poured through holes in the floor and allowed to soak into the ground under the building. The smell of rotten wood, which in these buildings could hardly come from anywhere except the floor, is very noticeable after a room has been closed for a few minutes. I would respectfully suggest that these floors be at once torn out and replaced by new hard wood ones, and that the surface of the ground under the building be removed and fresh earth and lime scattered thoroughly over the whole surface.

Early in May 4 or 5 cases considered to be typhoid fever appeared among the guests at the Hygeia Hotel, Old Point Comfort, Va., which is on the reservation outside the walls of Fort Monroe. Three cases occurred at the same time among officers and their families living in the fort or just outside, all of whom messed at the hotel. No case occurred among the other officers and the enlisted men and their families, although there were 2 of doubtful character in hospital reported as continued fever. There has been no death and no new case since May 13, so that the infection, whatever it was, has been removed. It was not considered to amount to an epidemic, and it was not reported until the cause could be traced out if possible. The fever appeared at a time when the place was full of visitors and the hotel crowded on account of the naval rendezvous in April, and a careful investigation failed to discover any cause of contagion. It was thought possible that some impurity had got into the drinking water at the hotel, which was intended to be all rain water; but there was also a supply from a well beyond Mill Creek used for other purposes than the table, which might have got mixed with the rain water. It was at once recommended that all water intended for drinking should be boiled, and none but rain water used for any such purpose, which was carried out, and whether on that account or not the disease disappeared.

There was some alarm at the time among visitors. Every person taken sick there or soon after leaving was said to have typhoid fever; but nearly every case that was accurately traced up proved to be either malarial or some ephemeral fever.

Erysipelas.—Twenty-eight cases, 1 fatal, were reported. Eighteen posts had 1 case each, three 2, and one 4 cases; the causes to which the spread in the last instance was ascribed may be learned from Capt. Munday's report given below (p. 104).

Influenza.—Of this disease 1,793 cases were reported, the largest number at any one post having been 141, 1 fatal, at Fort Custer, Mont.

Many posts reported no such cases, but these had usually an increased rate for catarrh and bronchitis. A total of 6 deaths was ascribed to this disease.

Measles.—The cases, 187 in number, of this disease were all of light grade. At the recruiting depot, Columbus Barracks, 52 cases occurred, and from this post the disease appears to have been conveyed to a few of the others. Generally, however, the infection was introduced from some community in the vicinity of the military station. Seven posts had 1 case each, seven 2, four 3, two 4, one 5, five 6, two 7, and one 8, 10, 13, and 14 respectively.

Mumps.—During the year 149 cases of mumps were reported, 43 of which occurred among the recruits at Columbus Barracks and 19 at Fort Yates; thirteen posts had 1 case each, three 2, four 5, two 10, and one 3, 6, 8, and 11, respectively. During the current year two notable epidemics occurred at Forts Apache and Buford. Of 40 cases at the former post most of the patients were Apaches of the Indian company. Metastatic orchitis occurred in 33.3 per cent of the cases. Of 30 cases at Fort Buford, 8, or 26.6 per cent, had orchitis.

Rötheln.—A few cases were reported from Forts Leavenworth and Grant and Plattsburg Barracks.

Scarlet fever.—Only 9 cases were reported as having occurred among the troops, 4 at Fort Myer, 2 at Fort Logan, and 1 each at three other posts. The disease appeared also among the children at a few posts, but was in all cases prevented from spreading by careful isolation and efficient disinfection.

Smallpox.—Only 1 case, at Fort Marcy, was reported during the year. This disease has been extensively prevalent among the Mexican population, so that the occurrence of only 1 case in our border garrisons shows the efficiency of our protective measures.

Tonsillitis.—Cases, making a total of 1,014, were reported under this heading from nearly every military station, the highest number from any one post being 52, from Columbus Barracks. It is impossible to say what proportion of these consisted of a merely local inflammation of a portion of the digestive tract and what proportion was due to a specific cause entitling the cases to be regarded as belonging to the class now under discussion; but remarks are so frequently appended to sanitary reports indicating the connection of these cases with defective drainage and sewerage, polluted soils, and neglect of proper ventilation of dormitories, that it would seem advisable from the standpoint of practical sanitation to regard them as more intimately associated with the specific febrile and acute infectious diseases than with the diseases of the digestive system.

Whooping cough was reported from Fort Monroe, Angel Island, and Fort Custer; 4 cases among the troops at the last-mentioned post and 1 each at the others. Few cases are reported as having occurred among the children. The following remarks by Hospital Steward F. G. Walters on its prevalence at Sandy Hook, New Jersey, illustrates the impossibility of preventing the invasion of a post or place by this disease if inhabited by persons susceptible to its attack:

> There has been no new case of pertussis and the epidemic may be considered as at an end. It was remarkable for the manner in which it was brought here. After careful investigation the infection can be traced only to the inhalation by some of the children living here of the atmosphere, diluted at that, which the infected children had inhaled. A friend of one of the residents paid a visit to this post one evening, accompanied by his two children who were convalescing from an attack of pertussis. The morning after their arrival it was known that these children had the whooping cough, and all children living here were kept away from them. The visi-

tor and his children left in the afternoon, and on the road to the boat landing passed two little girls, who, however, had no conversation with the strangers, but merely stood still and looked at them passing by. About ten to fourteen days after this the two little girls complained of what was at first thought to be a common cold, but which afterwards developed into characteristic whooping cough. This disease then ran its full course, attacking the other children in the same household. After the disease had become characteristic there could be no doubt that the infection was caused by the slight exposure mentioned, and that the infectious germ or principle must have been inhaled when the children passed by each other. About the same time one of the men showed symptoms of the disease. He stated that he had no conversation or intercourse with the children, but merely was sitting or standing on the veranda where they were and at a distance of several feet. This man had never had the disease. The whooping cough became epidemic at the post, attacking all children who were not protected by previous attack, and also several adults of both sexes.

DIARRHEAL AFFECTIONS.

These diseases had an admission rate of 110.85, as compared with 108.21 during the previous year and 162.30, the average annual rate of the previous decade. Diarrhea caused 108.04 of the rate and dysentery 2.81; but the nonefficiency occasioned was slight, only 1.13 per thousand of strength, as the average duration of the cases was short: diarrhea, 3.4; dysentery, 15.9 days. No death occurred among the total of 2,615 cases of diarrhea, including cholera morbus, nor among the 68 cases of dysentery reported. Reports as to causation refer these affections in a doubtful way to errors of diet and the continuance of high atmospheric temperatures, for most of them were recorded during the hot season. Forts Monroe and Hamilton, Davids Island, Fort Barrancas, and St. Francis Barracks had the largest rates.

In reporting some choleraic cases which occurred at Fort McPherson Maj. Cleary attributed the attacks to poisonous milk. All those affected became sick in from one to three hours after breakfast, and all of them used milk from the same source of supply. Six of the men thus attacked ate meat also for breakfast, but 5 made use of bread and milk only, and these 5 were severely attacked; for a time the recovery of 3 of them was doubtful. Maj. Cleary reported—

> I find it to be the custom of the milkman to deliver milk in bottles. He did so in these cases. The men use the milk but do not clean out the bottles, and next day the milkman collects them. I feel satisfied that the milk allowed to remain in the bottles decomposed, causing a poisonous product; and milk was again put into these bottles without properly cleaning them, thus causing the attack. To prevent such occurrences all such vessels should be thoroughly washed with warm water gradually increased up to near the boiling point.

MALARIAL DISEASES.

The admission rate for malarial diseases was low, 63.75, practically the same as for the previous year, but a marked improvement on 92.93 in 1890, and 120.20 in 1889. The rate of nonefficiency for the year was 1.76. No fatal case was reported among the total number of 1,543 cases recorded. Intermittents, 1,131; remittents, 309, and other malarial diseases, 103. Seven cases reported as typho-malarial are not included among these. As usual, the prevalence was greater among the white than among the colored troops, the admission rate for the former having been 68.43; for the latter, 26.03.

Washington Barracks, Fort Sill and Fort Myer had high admission rates, 563.25, 474.00, and 466.11, respectively. Fort Clark, with only 205.61 admissions, had the largest nonefficiency, 15.00; Fort Sill, the next n order in this regard, having only 8.87. The average duration of each ase at Fort Clark was 26.70 days, at Fort Sill, 6.85, while the cachexia of the cases at Fort Ringgold necessitated a prolongation of the average duration of treatment to 71 days. The post surgeon of the last-mentioned post insists that the malarial disease which adds so largely to the nonefficiency of the garrison is not in any way due to conditions existing at the post, but to those prevailing in the country in which the troops operated during the spring and summer. Washington Barracks and Fort Myer had nonefficient rates of 7.32 and 6.46, respectively.

The fevers at Fort Clark were remittents of a severe type, in many cases resembling typhoid fever, and, as a matter of fact, some of the cases developed late in the season displayed the characteristic eruption of enteric fever, and in one fatal case (Peyer's) patches were ulcerated. It was observed that the number of cases was always increased after heavy rains, which flooded the basin of the spring contaminating the water supply with surface washings. Plans for the protection of the spring were considered during the year. (See below, p. 125).

Reports from Maj. James P. Kimball, Capt. E. A. Mearns, and Capt. W. B. Davis, at Fort Clark, are submitted herewith:

MAJ. JAMES P. KIMBALL.—*September.*—The sickness in the command is excessive. There are 32 men on sick report. The mean daily number on sick report during the month has been 32, which is 10 per cent of the mean strength of the command. The prevailing diseases are remittent fever of a severe type, in many cases closely resembling typhoid, acute diarrhea, and dysentery. There have been 25 cases of remittent fever under treatment during the month, of which number 2 were taken sick in July, 11 in August, and 12 in September. Of this number 9 have been returned to duty and 16 remain under treatment. * * * It is my opinion that the character of the water supply would be improved by the removal of the vegetable growth in the pond, where this can be done thoroughly. It has been established by exact experiment that the microbe of cholera is capable of enormous multiplication in water containing organic or vegetable material, and there is no reason to doubt that such is also the case with the germ of typhoid fever. In such a mass of vegetation as now fills the pond there must be more or less decaying matter, which in any case ought to be removed. That the long continued high temperature of a southern Texas summer is largely instrumental in the production of the fevers which so often prevail, I think, admits of little doubt, and that exposure to the midday sun ought, as much as possible, to be avoided.

October.—There continues to be an excessive amount of sickness at the post, due to the continued prevalence of remittent fever. The number remaining under treatment September 30 with this disease was 16; the number taken sick during October, 18; returned to duty, 14; leaving 20 cases now under treatment. The mean daily number of all cases on sick report during the month has been 25; that is, 8 per cent of the command.

It has been noticeable during the past three months that the number of new cases of fever has increased after heavy rains. During the 21st, 22d, and 23d instants, 3½ inches of rain fell. From the 1st to the 18th instant there were 8 new cases, then none until the 24th; and from the 24th to the 30th, 10 cases.

CAPT. EDGAR A. MEARNS.—*November.*—The health of the command has been good, except that there has continued to be a large number of fever cases—32 cases of remittent and typhoid fever having been under treatment during the month, of which number 12 were new cases, the remaining 20 having been taken sick prior to the first of the month. Five cases of typhoid fever were treated during the month, with 1 fatal, in which were revealed the intestinal ulcers of typhoid fever. Three of the remaining 4 cases have developed the characteristic skin eruption of this disease upon the abdomen, and have otherwise run a typical course, the remaining case having been recently taken sick.

Whether these fevers have resulted from the surface drainage, from contamination of the source of water supply, or from still other causes, I am unable to say, but it is highly important, in my opinion, to provide as far as possible against a return of this scourge next year by guarding the post spring from defilement in the manner recently recommended by Dr. Kimball. This work, moreover, should be finished before the advent of hot weather.

CAPT. WILLIAM B. DAVIS.—In the summer of 1892, while post surgeon at Fort Clark, Tex., 30 or 40 cases of so-called Texas fever, a hybrid in symptoms between typhoid and malarial remittent fever, though not amenable to the treatment of either, came under my care. In every instance the disease was found only among those men whose barracks were to the leeward of an open drain (about 50 yards distant) and who did fatigue duty in the broiling sun.

That this drain was a potent factor in producing the disease is conclusively established by the fact that there were from 10 to 15 laundresses' quarters on the windward side of the drain (occupied by married soldiers and their families) and not a single case appeared among them; nor did any case appear in the officers' row, which is also to the leeward of the drain, but at such a distance that the poison would necessarily be so diluted as to be innocuous. Moreover, the men's quarters were single-story buildings, while the officers' families all occupied rooms in the second story. That the drinking water was not to blame is, I think, proven by the fact that the same water used by the men in barracks was also used by the families of the officers and of the married soldiers, among whom, as was mentioned above, there were no cases. Again, I had a considerable practice in the adjacent town of Brackettville, and though their sole water supply was the same as that used by the post, not a case of fever occurred.

I am informed that when the fever was so bad at this post (Sam Houston) two or three years ago, the greatest number of cases occurred in the barracks in the southeast corner of the square which is the nearest to the meadow to the southeast of the post, into which all the drains of the post empty and from which direction comes the prevailing wind.

There is no description of this disease to be found in any work I have consulted; and a new arrival, if confronted with it, thinks at first he has typhoid to deal with. but the sense of wellbeing, the comparatively slow and strong pulse, the absence of marked iliac tenderness, etc., make him change his diagnosis to malarial fever (remittent); but when quinine has been ordered and the temperature immediately and invariably goes up one or two degrees, he is in a quandary. The cold pack. which is so successful in reducing the temperature (temporarily at least) in typhoid fever, has on several occasions in my hands run the temperature up from 104° to 106°, while I was searching for some means of combating the disease. Finally, the conviction was forced upon me that the *materies morbi* was a ptomaine generated in the intestinal tract, caused by a germ from without, and the next question was to find a suitable agent for disinfecting the *primæ viæ*. Pearson, of Cape Colony, Africa, having called attention some years ago to the value of chlorinated solution of soda internally in typhoid fever, I determined to use that, and to supplement it by acid salicylic, or salol. My experience has been very gratifying, and if a case reports within two or three days after the inception of the fever, it can be aborted within a week, and can be favorably affected at any stage of the disease. Routine treatment is as follows: Liq. sodæ chlorinat, m., xv–xxx, in an ounce of water every three hours; acid salicylic, gr. v, in capsule, every six hours (or salol, gr., x thrice daily). Liquid diet, preferably milk or koumiss. I may mention that under any other plan of treatment that I have seen or heard of, the fever lasts from four to six weeks or even longer.

For many years back remittent fevers have prevailed with more or less intensity at Fort Myer, Va., and have been attributed to the low grounds of the Potomac and of its tributary valleys. The post is situated on an elevated plateau, which is screened by fine trees from the malarious exhalations in its neighborhood. Soldiers affected by malaria were supposed to have contracted their disease by exposure to pernicious miasms while passing after nightfall through the low grounds in returing to their post from the city. During last autumn the number of cases was so great as to call special attention to the conditions, and a medical inspection of the post was ordered. It was found that in September the garrison of 290 men had 85 cases of sickness, of which 52 were cases of remittent fever. Women, children, and civilian employés were affected in like proportion. The attacks were controlled readily by quinine. This local prevalence of malarial fever was attributed by the inspectors to malarious water in the shallow wells from which the post was supplied. These wells are situated in a ravine in front of the post and are fed by its subsoil drainage. During seasons of rain and snow the supply suffices for the use of the garrison and is held to be fairly good in quality, but at the time of the prevalence of the remittents the inflow into the wells was small and of unsatisfactory quality, as shown by its free ammonia, chlorides, nitrites, nitrates, and organic matter. The use of this water in its fresh state for drinking purposes was interdicted. Directions were given that it should be boiled before being used; and recommendation was made that the post be supplied by connecting it with the Washington, D. C., water mains. Congress failed to authorize this connection, and the post continues dependent on its wells. During the coming autumn the water will have to be boiled or thoroughly filtered to prevent a recurrence of the remittents which were so prevalent in September last. The following is the report of Maj. Charles Smart and Dr. William M. Mew on the water supply and fevers of Fort Myer:

Fort Myer is situated on a plateau distant about half a mile from the Potomac River and elevated about 200 feet above its surface. The line of officers' quarters is on the river-side edge of the plateau, and from this edge the surface makes a rapid descent for about 150 yards into a sandy hollow, where three wells have been dug, each about 25 feet deep, 10 feet in diameter, brick-lined, and suitably covered. The water from these wells is pumped into elevated tanks for distribution to the garrison.

At the time of our inspection, 3 p. m., we found about 4,500 gallons in one tank, its capacity being 20,000; two other tanks, each capable of containing 10,000 gallons, were empty, and the water in the wells was so low that a can dipped into them brought up samples faintly cloudy from minute floating particles, raised from the bottom by the disturbing act of filling the can. Probably not more than 500 gallons could at this time be pumped into the distributing tank, making a supply for the day of 5,000 gallons.

We learned from the commanding officer and the men in charge of the pumping station that the average quantity of water available daily for the past two months had been about 5,000 gallons. To fully satisfy the needs of the garrison, 30,000 to 35,000 should be supplied, and this seems to have been the estimate on which the capacity of the distributing tanks (40,000 gallons) was based.

During the rains and snows of winter and spring the wells furnish an average of 30,000 gallons; but in the hot months, and particularly during such long-continued dry weather as occurred in the past summer, the supply is wholly inadequate to keep the post and its garrison in good sanitary condition.

Sewers, water-closets, and urinals are foul from want of water to flush them efficiently. Bathing has been practically stopped during the summer, and the horses have for weeks been watered at a creek, which receives much foul drainage from the fort and its neighborhood.

Even if this supply were at all times amply sufficient, its quality is such as to excite grave doubts as to its wholesomeness. Shallow wells are dangerous and are used only as individual supplies in the early stages of the settlement of a new country until a purer general supply can be obtained by the coöperation of the individuals. Such wells are especially prone to disseminate malarial remittent fevers and to become infected with typhoid, particularly when their waters are low. The diminished prevalence of malarial fevers, not only at our military posts, but in the civil communities of the United States during the past quarter of a century, is due in a great measure to the substitution of a pure water supply for the surface waters and shallow wells used at an earlier period.

At the site of the wells at Fort Myer there was originally a spring, but the spring water which enters the wells is now lost in the preponderance of subsoil water which drains into them; in fact, it appears to us that if this post had a good system of subsoil drainage, with efferents emptying into the creek, the wells would become practically dry. This opinion is based on a survey of the surroundings of the wells, and is sustained by the chemical analysis of the water. It is essentially a rain water which has flowed over a soil rich in decaying vegetation, and which, in passing through the soil into the wells, has not undergone a natural filtration sufficient to purify it. It contains more than an allowable quantity of free ammonia and of chlorides, derived in great part from animal excretions. Its organic matter is also in excess. The presence of nitrates shows that the partial filtration has had a purifying influence, but the associated presence of nitrites indicates that the source of the impurity is so near to the wells that the process of change is still in progress when the water is distributed for use. The greater part of the organic matter is of vegetable origin and in process of fermentative change. It is, in fact, a surface water, with strong possibilities of malarial qualities; and in view of the fact that the prevailing disease at the post is now remittent fever, we are at liberty to suggest the probability rather than the possibility of malarial qualities.

During September there have been 52 cases of this fever among the troops of the garrison, averaging about 290 men. Women, children and employés have also been affected. The attacks last from four to six days, yielding readily to quinine, and

> thus manifesting their malarial origin. The total sick from all causes from September 1 to 28 numbered 85, of which, as stated, 52 were cases of fever. In July there were only 4 cases, and in August 6, of malarial fever.
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> In considering the excess of fever in September, it is to be remembered that an unusual prevalence has been manifested at other points than at Fort Myer. At Washington Barracks, for instance, there were, up to the 28th, just as many cases of malarial fever, to wit, 52, as at Fort Myer, but the garrison had a somewhat greater strength, 380 men. In July Washington Barracks had 13 cases, and in August 17.
>
> There is, however, one notable difference in the character of these two posts, *i. e.*, remittents exclusively prevailed at Fort Myer, intermittents at Washington Barracks; and this has a bearing on the probability of unwholesomeness of the water at the former post, for when malarial fevers are recognized as due to malarious waters the fever is generally of the remittent type.
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> In view of these observations it is evident that an adequate supply of good water should be obtained for Fort Myer. Such a supply would probably put an end to its remittent fevers, and the elevation of the post would probably keep it free from the intermittents which infest such low grounds as those of Washington Barracks.
>
> To aid in accomplishing this result, it is needful, however, to do something more. The plateau on which the post is built is level and retentive of moisture. With one or two exceptions the buildings have been erected without any attempt to drain their sites. In rainy weather the surface is miry and the subsoil saturated. Basements become damp, and those buildings that have no basements are in a yet worse condition. Rain leaders pour out the water from the roofs on the ground within a foot of the wall to percolate along it and increase the dampness of the site. A system of subsoil drainage that would free the surface and subsoil from excessive moisture would do much to improve the healthfulness of the post.
>
> The piles of stable manure, garbage, and other filth in a ravine in rear of the stables should not be permitted to accumulate; if no other disposition can be made of them, provision should be made for their cremation.
>
> So far as we can see, the solution of the question of water supply at Fort Myer is to be found in effecting a connection with the supply of Washington City. There is, as we understand, no engineering difficulty in the way of effecting this; all that is required being the needful authority and money. As some time will be required for a radical change of this kind to be made, provision for the immediate future is needful. There is no reason why the water of the existing wells should not be used for all purposes other than drinking and cooking. It may be used for flushing sewers and urinals, for washing, bathing, etc.; and, as the dry season may be considered to be now at an end, there will probably be, until June next, the daily average product of 30,000 gallons. Should the dry season be prolonged for some time, the post would have to continue during the period on its present limited supply. There would be inconvenience in this, but no ill health, as it seems to us; for the remittent fevers which now affect the garrison are not the result of the insufficient supply, but of the impure supply. For drinking or household use it would be unadvisable to use this water. Until a general supply for all purposes is obtained, distilled water might be furnished.
>
> At Forts Brown, Ringgold, Clark and other posts ice machines have been issued, primarily for the use of the sick; but, incidentally, by attaching a condensing coil they have furnished a supply of pure drinking water to the garrisons, and the sick reports of malarial fevers have been materially lessened in consequence. Fort Brown, in fact, which formerly was notorious as the most insalubrious site held by the United States troops, has practically had no malarial fever since the introduction and use of distilled water instead of the turbid and malarious water of the Rio Grande.
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> Distilled water for potable use is recommended merely as a temporary expedient to cover the period that will elapse until a permanent and good general supply is obtained. If delay is experienced in procuring distilled water, the well water should be boiled before it is used as a supply for drinking.

It is of interest to observe that while the garrison of Fort Myer, Va., was suffering from remittent fever the troops stationed at Washington Barracks, D. C., on the low grounds on the other side of the river, also were affected with malarial fevers, only in the latter instance the disease was of the intermittent form. The presence of malarial exhalations in this locality accounts for the prevalence of the disease. The insalubrity of this post has been materially lessened of late years in proportion to the progress of reclamation of the Potomac marshes. There remains, however, the James Creek Canal bounding the reservation on the east. This canal is an open sewer, extending as such about half a mile into the city and receiving much drainage and sewerage. Some little current is derived from Tiber Creek and the tides, but the water is foul smelling at all times, and at low tides there is much uncovered bottom. That such a nuisance should have been tolerated so long in Washington, D. C., seems inexplicable. Fortunately the bank next the post is lined with a double row of poplars and willows, forming a dense screen of foliage which has no doubt done much to intercept malarious exhalations.

In connection with remarks on enteric fever at Fort Reno, Okla., submitted above (p. 44), the following report on the malarial fevers of that locality, by Capt. J. C. Merrill, is of interest:

The following notes on malarial fevers observed in the Indian Territory are intended to call attention to certain peculiarities of type, character, course, and diagnosis. They are based upon observations at Fort Reno, situated nearly in the center of the old Indian Territory. The surrounding country is an open rolling prairie, wooded only along the streams, the smaller of which usually dry up in summer, and even the larger ones in dry seasons. The fort is at the end of a point of land projecting from the prairie level into the valley of the north fork of the Canadian River, which stream is about 1 mile to the north; the prevailing winds at all seasons are from the south. The natural drainage of the post is good; drinking water for officers' use is brought daily from Caddo Spring, about 4 miles distant, and is of excellent quality; but the general supply, which is very impure, is river water pumped into settling tanks and distributed by pipes.

The Indian Territory has long been noted for the prevalence of fevers of a severe type, and the total mortality from this cause has been very considerable. The opening to settlement of Oklahoma, the breaking of ground for railroad construction and by farmers, and the rapid growth of new towns, chiefly notable for neglect of the most elementary sanitary measures, and for the placing of wells and privies side by side, have brought these fevers into greater prominence and caused the rapid spread of typhoid fever.

With the exception of returns and reports by medical officers of the Army, there is no special literature of these endemic fevers, and it is on this account that the following notes have been written.

The character of a majority of the cases admits of no doubt; they are certainly malarial. At first, and especially when an early formal diagnosis is made, they are liable to be recorded as intermittents; but on studying the progress of each case, and especially in reviewing a series of temperature charts, it will be remarked that perfect intermissions are rare, and that the majority of the cases are remittents. The greater number of these require no special notice; a 10-grain dose of calomel at night, followed in the morning by a Seidlitz powder or sulphate of magnesia, with about 20 grains of quinine two hours before the expected rise of temperature, and repeated when the sweating stage is well established will, as a rule, promptly effect a cure, which is much more apt to be permanent if full doses of arsenic are given for a week or two or until its constitutional effects are manifest. In severe cases in which more or less debility continues for two or three weeks, a tonic treatment of iron, arsenic and the tinctures of nux vomica and cinchona is useful in hastening recovery.

Recurrences of such febrile developments are not uncommon, but they are usually as amenable to treatment as the primary attacks and of the same remittent type.

The most severe cases, to which particular attention is invited in this paper, have a course quite unlike those just described; and their precise diagnosis, as considered below, admits of more than one opinion. In all the malarial fevers seen at Fort Reno the first and subsequent chills were slight, and in quite a number altogether absent, and this irrespective of the subsequent progress of the cases.

In the form now under consideration there is nothing at first to attract especial attention, but it is soon obvious that quinine has little or no effect in reducing the temperature or in mitigating or preventing the daily exacerbation; the patient rapidly loses strength and the difference between the morning and evening temperature becomes less marked. Diarrhea and constipation alternate; the stomach is generally but little affected, for nausea is uncommon and vomiting more so; neither the spleen nor the liver is enlarged or tender; the mind is clear; there is little or no headache, and the patient usually sleeps well. Perhaps the most prominent feature is the want of regularity in the recurrence of the febrile accessions or exacerbations. A well marked double quotidian has been several times observed, but generally there is but one prolonged rise lasting for several hours, and beginning at any hour of the day or night without reference to previous rises; this irregularity renders the administration of quinine to anticipate a recurrence of the fever very uncertain.

An examination of a large number of temperature charts shows much diversity in the course and degree of the fever. Three points, however, at once attract notice, a well-marked remission after a continued fever of about two weeks, followed by a secondary fever, often higher than the primary one; and afterwards subnormal temperature and convalescence. The subnormal temperature is generally very pronounced, and seems to be independent of the previous administration of antipyretics. Although the diagnostic signs of typhoid fever are absent the typhoid condition is well marked, and weakness and exhaustion are often extreme, requiring free stimulation. Death, when it occurs, is due more to cardiac failure than to any other cause.

The diagnosis of this type of fever presents many points of interest. From typical typhoid it differs in its sudden onset and in the absence of early hebetude and later stupor, of epistaxis, tympanites, and the pathognomonic eruption. Cough and diarrhea may be present but are too variable and uncertain to be of diagnostic value. From typhoid fever as, in my experience it generally occurs in the southwest, the sudden rise of the primary fever, absence of the rose-colored spots, and the marked secondary rise of temperature, are important distinctions; in most other respects the two fevers are clinically much alike. From the commoner forms of remittent fever a very marked distinction is the slight effect of quinine in controlling the rise and course of the fever.

Several names may be considered for the purpose of making a formal diagnosis, but until opportunity is given for determining the presence or absence of intestinal lesions, any name must be considered as provisional. Typho-malarial is convenient and descriptive, if used without implying the presence of specific typhoid fever; but this term has been applied in such a loose way that perhaps it is better to avoid it. Adynamic remittent is appropriate enough as a name, and the cases agree with the definition given by Sternberg,* but they agree equally well with the form "which resembles typho-malarial fever in the type and duration of the febrile movement, and in the fact that it is not cut short by the administration of quinine, but in which the special symptoms of enteric fever are obscure or absent." Still it seems to me that such a fever, which Sternberg does not recognize as identical in etiology with a paludal remittent, comes too near his definition of adynamic remittent fevers—"which, instead of yielding to treatment within the usual time or terminating in simple intermittent fever, are protracted and develop adynamic symptoms, accompanied by more or less fever of an irregular character" †—to be easily distinguished at the bedside.

I have applied the name "continued malarial fever" to these cases although aware that this name is of too general application to be altogether definite and satisfactory.

The prognosis, although usually favorable, should be guarded, for if the patient have any constitutional weakness it is very liable to be developed and exaggerated, with serious, perhaps fatal, results. The heart, even if free from organic lesion, is often greatly weakened; in every case its action should be carefully watched. Indiscretions in diet generally cause a recrudescence of the fever, with or without diarrhea.

Complications.—Cardiac weakness, as just mentioned, is the most frequent and dangerous complication. Gastric irritation is not often troublesome, but in some cases it is better to give quinine hypodermically, and to give only food by the mouth. The solution of bisulphate of quinine has been frequently used, and in no case has local suppuration or any other unpleasant result occurred.

One case of hæmaturia was quickly cured by quinine. It appeared with each rise of the fever and lasted about three hours, the urine then being of the color of porter, but perfectly clear and normal in the intervals.

Treatment.—In all cases of fever at Fort Reno full doses of quinine were given at once, usually with calomel (grs. x) in the evening, followed by a brisk saline the next morning; and in the majority of cases this treatment resulted in a speedy cure. As a rule 20 or 25 grains were given two or three hours before the expected rise of fever, and a similar or larger dose when the sweating stage was well established. If this proved inefficient 30 grains were given in the same way next day, and repeated as indicated. Given thus I have found quinine more effective than by any other method, though I do not hesitate to administer it during the febrile stage if there is a necessity for so doing. If, however, after four or five days there is no decided improvement, it may safely be assumed that the case is not one of simple intermittent or remittent fever, but of specific typhoid or of the continued form under discussion, in which case it is well to reduce the quinine to tonic doses. During the intermission between the primary and secondary fevers, I usually substituted for the quinine Fowler's solution in 5-drop doses three to five times a day, and returned to tonic doses of quinine during the secondary fever. Arsenic is borne remarkably well; I have given it for days in the intermission, and for weeks during convalescence in the above doses with the best results, and without causing the least gastric disturbance or swelling of the eyelids. Generally the primary fever is not so high as to call for special antipyretic treatment, but this is frequently necessary during the secondary rise. For this purpose antipyrin or antifebrin is superior to the wet pack, inducing free diaphoresis and promptly reducing the temperature from 2° to 4°. While these medicines have no curative effect they save the patient from the injurious effects of the high temperature, give great relief, and by hastening the sweating stage afford an opportunity of giving quinine much sooner than could otherwise be the case. I can not too highly recommend the use of one or other of these drugs in these cases; 10-grain doses of antifebrin and 15-grain doses of antipyrin act as promptly and efficiently as larger ones. The treatment in other respects is largely symptomatic; the diet is limited to milk, eggs, and similar easily-digested food, and much importance is attached to this. Stimulants are generally required, sometimes freely. In the later stages of the disease turpentine is sometimes indicated, and is given with excellent results. When signs of heart failure are present, digitalis is indispensable. I have seen more than one life saved by its free use, by which is meant the administration of 1 to 3 drams of the tincture in 24 hours, the patient being carefully watched that the amount given may be properly regulated.

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* Malaria and Malarial Diseases, N. Y., 1882, p. 250.

† *loc. cit.*

Convalescence is slow; a temporary change of air and scene is the most effective means of cure; when this is impracticable, a general tonic treatment assists in obtaining the desired result.

In a small proportion of the cases permanent disability results from malarial cachexia, with chronic dysentery or diarrhea, which may be temporarily alleviated, but not permanently cured, while the patient remains in the malarious locality. One case of malarial hæmaturia became chronic, returning at intervals each winter whenever the patient was exposed to cold.

Fort Brown, Tex., continued free from malarial diseases during the year. The following letter from the post surgeon, Capt. George H. Torney, to the post adjutant, April 2, 1893, gives in full the views of the medical officer on the gratifying improvement recently effected in the health of this garrison:

In compliance with instructions received from the Commanding Officer directing me to submit for the consideration of the Brigadier-General Commanding the Department of Texas, now present at the post, a brief and succinct report regarding the causes which have led to the large reduction in the percentage of the sick list of Fort Brown since 1889, in which year it was reported by the Surgeon-General of the Army to have been the most unhealthy post in the country. I have respectfully to state as my opinion that the improvement in the health and efficiency of this command is due in a large measure—

(1) To the use by the enlisted men of the command, during the whole of the year, of pure drinking water cooled by a liberal supply of ice to make it palatable.

(2) To the suspension of drills and severe fatigue duty during the period of excessive hot weather—that is, from the first of May to the 31st of October of each year.

(3) To the wearing during the hot season of light-weight clothing and straw hats suitable to this almost tropical climate.

(4) To the temperance of the men of the command, due in itself in a large measure to the fact that there is always in the barracks plenty of cool water to refresh them after returning from outside duty: thus avoiding in a large degree the temptation to resort to cool alcoholic stimulants to relieve thirst and fatigue, which so quickly follow exertion in this climate.

(5) To the correction, as far as possible, of every observed sanitary defect of the post, and

(6) To the deficiency of the annual average precipitation of rain during the last three years.

To these headings may be added the statement that when a soldier is admitted to the post hospital for medical treatment, he is kept under observation until it is believed that he is entirely well and free from the effects of the disease, in order to prevent the possibility of a relapse, no matter what may be the disability, as it has been observed that convalescence is not easily established in sick patients in this climate and extends beyond the period ordinarily considered necessary to restore perfect health in other parts of the country.

VENEREAL DISEASES.

The admission rate for these diseases was 76.73 during the year, the prevalence being somewhat greater among the colored troops and Indians than among the whites. This rate shows, unfortunately, no improvement, the rate of the previous year having been 72.46, and the average annual rate of the previous decade 77.31. The average number of men constantly sick per thousand of strength was 5.33 as against 5.00 for the previous year. Gonorrhea and its results caused 40.90 of the 76.73 admission rates; chancroids, 11.11; syphilis and its results, 16.03, and other venereal diseases, 8.68. The average duration of treatment of each case was 25.4 days; gonorrheal cases, 21.1; chancroidal, 22.7; syphilitic, 38.5, and other cases 25.1 days. Fifty-three men disabled by these diseases were discharged from service during the year.

Columbus Barracks had the highest rates; admission 292.72 and nonefficiency 18.54 per thousand of strength. The improvement noted in last annual report has not been kept up at this recruiting depot. A fall in the rate to 266.20 in 1891 from 380.46 in 1890, and 462.44 in 1889, suggested hope for the future which is not sustained by the rates now recorded. Fort Ringgold, Jackson Barracks, and Fort McPherson follow Columbus Barracks in the relative frequency of their cases, 208.97, 198.11, and 195.48 respectively; but Fort McIntosh takes second place in order of nonefficiency with a rate of 15.47, while Fort McPherson and Jackson Barracks follow with 13.67 and 12.16.

Medical officers at most of the posts affected with these diseases express their inability to suggest measures to control their prevalence where the sources are so plentiful and accessible. The post surgeon at Fort Ringgold undertook to treat the women, but could not prevail upon them to continue until cured. At Forts Custer and Sill recommendation was made to have the affected women removed from the reservation. The post surgeon at Fort McPherson reported that the same men are repeatedly on the sick report from these diseases; that "one man is now in hospital for the fourth time this year with some form of the affection, and he no sooner is returned to duty than he exposes himself again." A man of this character is morally unfit to be a soldier. He is a nuisance in a company and is so regarded by the good men who shun his contact and are suspicious of the bathroom and other conveniences which they have in common. He should not be retained in service. Post surgeons should initiate action in such cases as in those of confirmed inebriates.

ALCOHOLISM.

The admission rate for alcoholism, 37.23 per thousand of strength, is an improvement on the past, comparing favorably with 40.01 in the previous year, 40.73 in 1890, 41.31 in 1889, and 56.68 as the average annual rate of the previous decade. Drunkenness to an extent requiring medical care was relatively more frequent among the white troops than among the negroes and Indians, the rates being respectively 41.19, 8.35, and 1.37. The corresponding rate in the home service army of Great Britain was only 2.69; in the army of Prussia, Saxony, and Würtemberg, 1.65; of Austria-Hungary, 0.11; of Italy, 0.06.

The post having the highest rate was Fort Brady, 179.49; but Jackson Barracks had practically the same rate, 179.23. Eight other posts had the admission rate over 100 per thousand of strength, in the following order, after the two already named: Fort Porter, Willets Point, Rock Island Arsenal, Fort Ontario, Camp Oklahoma and Forts McPherson, Marcy and Barrancas.

The admission rate of the Indian companies does not appear to give full expression to the prevalence of intoxication among them, for the sanitary reports speak occasionally in most unfavorable terms of their habits in this regard. Thus, from Fort Wingate Maj. Matthews reports among them in July one homicide and one death from accident, both results of intoxication, and in December five members of the troop suffering from wounds received in drunken quarrels; while from Fort Bowie Capt. R. W. Johnson reports drunken brawls to be of frequent occurrence, "and if the men were only allowed to retain possession of their arms it would be but a short time before their number would be materially decreased."

RHEUMATISM.

The admission rate, 71.52, continues to show a gradual lessening of the prevalence of rheumatic affections. The rate for the previous year was 75.33; for 1890, 83.19, and the average annual rate of the previous decade, 107.28. Thirty-eight men were discharged for these affections, giving a rate of 1.41 as compared with 1.25 in the previous year, 2.06 in 1890, and 2.96 as the average of the previous decade.

The cases of acute articular rheumatism numbered 124, and constituted 5.12 of the total admission rate, 71.52. The average duration of these cases was 39.4 days. Chronic articular rheumatism constituted 15.37 of the total rate; average duration, 25.3 days. Muscular rheumatism and myalgia formed 51.03 of the total; average duration, 12.2 days.

The highest admission rate, 195.12, was reported from Fort Marcy, N. Mex.; the second, 169.81, from Fort Canby, Wash.; the third 166.18, from Fort Robinson, Nebr.; and the fourth, 162.60, from St. Francis Barracks, Fla. Ten other posts had an admission rate of over 100 per thousand of strength; three in Arizona Territory, and one each in New Mexico, Florida, Montana, South Dakota, Minnesota, Michigan, New York and Virginia. Fort Canby, Wash., had the highest noneffective rate, 11.93; Fort Barrancas, Fla., second, 9.94; Fort Bowie, Ariz., third, 9.76, and Forts Snelling, Minn., Bayard, N. Mex., Yates, N. Dak., and Sully, S. Dak., followed in order.

These statistics, as has been pointed out before in the reports of the Surgeon-General, demonstrate the dependence of these diseases on local rather than climatic conditions. Damp and undrained sites are productive of rheumatism in any climate, and damp clothing or bedding are causative independent of dryness of site or climate. The frequency of attacks in Arizona and New Mexico is undoubtedly owing to carelessness induced by the ordinarily warm and dry climate. Commands take the field unprepared for the rain that occasionally overtakes them or the chilly nights which they have to pass when their service leads them from the plains into the mountains. Even the pleasant coolness of the shade is dangerous in this regard after exercise in the hot sun. Commanding officers can do much toward preventing the development of rheumatic troubles and internal congestions and inflammations by a careful supervision of the equipment of the men and a thoughtful consideration for their well-being.

PULMONARY CONSUMPTION.

The admission rate of the Army for consumption was 4.34 per thousand of strength, considerably in excess of the rate of the previous year, 2.97. The rate recorded by the white troops was 3.27, by the colored troops 4.42, and by the Indians 35.62. The absolute number of cases was 105, of which 70 occurred among the white troops, with 9 deaths and 35 discharges; 9 among the colored troops, with 2 deaths and 3 discharges, and 26 among the Indian companies, with 7 deaths and 13 discharges. The death rate from this cause alone among the Indians, 8.94, was greater than the death rate, 6.44, from all causes in the Army as a whole. Some remarks on the quarters and habits of the Indians, submitted below (p. 103), are of interest in this connection.

PNEUMONIA AND PLEURISY.

Eighty-three cases of pneumonia (not a complication of other diseases) were reported during the year; 72 (16 fatal) among the white troops, 8 (1 fatal) among the colored troops, and 3 (none fatal) among the Indians. The average duration of each case was 31.9 days. Ninety-nine cases were reported in 1891, 96 in 1890, and 130 in 1889, so that this manifestation of disease may be regarded as having touched our military stations but lightly during the past year.

Seventy of the cases, of which 13 were fatal, were reported as lobar: 10 (1 fatal) as catarrhal, and 3 (all fatal) as undefined. The largest number of cases at one post was 10, at Columbus Barracks; Jefferson Barracks and Whipple Barracks had each 5 cases; Forts Assinniboine and Buford, 4 each, and Fort Leavenworth 3. Eighteen posts had each 2 cases, and sixteen each 1 case.

Forty-four cases of pleurisy were reported: White, 37; colored, 4; Indian, 3. Two of the cases among the white troops were fatal.

INJURIES.

The admission rate for injuries, 252.74, or including 49 cases of hernia, usually classed with diseases of the digestive organs, 254.76, differs but little from those of former years. As usual also, contusions and sprains formed about one-half of the whole number of injuries, the average duration of these cases being 8.8 days, as compared with 11.8 days for injuries in general.

Sixty-seven cases of *heat stroke* were reported, 4 among the colored troops, the others among the whites; none fatal. On the other hand, of 66 cases of *frostbite* and *general freezing*, 22 cases, or 10.81 per thousand of strength, occurred among the negroes and only 43, or 2.01 per thousand among the whites; 1 Indian also was frost-bitten. Relatively twice as many cases of *abrasions*, *blisters*, *burns*, and *scalds* were recorded among the Indians as among the other troops, the average rate of the Army for these injuries being 19.58 per thousand men. *Contusions* and *sprains* gave an admission rate of 134.32, and *wounds*, exclusive of gunshot, 55.32; none fatal, but permanent disability resulted in 5 cases of each of these two classes of injuries. Among 62 cases of *dislocation* were included 4 discharged for disability, and among 169 of fracture 4 deaths and 12 discharges. Twenty-one men were discharged on account of *hernia*. Fifty-six violent or accidental deaths were reported, 27 by gunshot, 6 by poison, 11 by drowning, 6 by crushing, 5 by falls, and 1 by freezing. Of the 27 gunshot wounds 16 were suicidal, 5 homicidal.

4 accidental (1 in quarters, 1 while hunting, and 2 at target practice), and 2 shot by sentinels (1 on failure to respond to challenge and 1 while endeavoring to escape from guard). Of the 6 deaths by poison all were suicidal; strychnine was used by 1, opium or morphine by the others. Of the 11 cases of drowning all were accidental so far as known. Of the 6 deaths by crushing, 4 were caused by railroad trains and 2 by loaded wagons. Injury to the brain was the cause of death in all the cases of falling from a height.

Lieut. Alexander N. Stark, assistant surgeon, U.S. Army, reported on the successful employment of Silvester's method of artificial respiration in a case of drowning at Fort Monroe, Va:

> On Monday, June 5, 1893, I was hastily summoned to attend a man who had been rescued with great difficulty while in danger of drowning, and only after several minutes of total submersion. I found the patient pulseless, cold, and without any evidence of respiration, so I immediately began his recuperation by the method advocated by Silvester, of London. First expelling all the ingested water possible by inverting the patient and making abdominal pressure, I began artificial respiration and continued it for thirty minutes without any evidence of success, the condition of the patient remaining unchanged. After several minutes more of exertion I noticed a very feeble radial pulse and other signs of returning animation, and thus encouraged, I redoubled my efforts and soon succeeded in reëstablishing both normal circulation and respiration, though the patient was still in a profound state of unconsciousness. By the use of the ice-water douch, in conjunction with artificial respiration, consciousness soon returned, and the administration of a mixture of warm salt water and whisky, causing copious emesis, the patient was soon out of danger, though very much exhausted.

The 22 cases of suicide that occurred during the year are equivalent to a rate of 0.82 per thousand of strength, as compared with 0.83 during the previous year, and 0.71 the average annual rate of the previous ten years. The last reported rates of foreign armies are: Great Britain, 0.21; Italy, 0.33; Prussia, Saxony, and Würtemberg, 0.64; and Austria-Hungary, 1.18.

Eighteen of the 22 suicides were members of white commands. The causes assigned were domestic troubles in 1, failure to obtain desired promotion in 1, fear of court-martial in 2, mental despondency attributed to ill health in 2, temporary mental aberration in 4, alcohol in 1 and probably in some of the 7 reported as unknown. No case occurred among the colored troops. Four suicides among the members of the Indian companies give a material increase to the rate reported at this time, and detract seriously from that reputation for equanimity, self-restraint, and fortitude with which the American Indian has been so liberally endowed in most of his literary portraits. The reported causes in these cases were in 1, mental depression from syphilis; in 1, homesickness, a pass to visit his tribe having been denied him; and n 2, jealousy and domestic troubles.

One of the 22 suicides was a commissioned officer, 8 belonged to the nfantry, 6 to the cavalry, 3 to the artillery, 2 to the ordnance, 1 to the hospital corps, and 2 to other corps. Eleven were 30 to 34 years of age; 4, 20 to 24, and as many 25 to 29; 1 between each of the ages 40 o 44, 45 to 49, and 50 to 54. Seventeen were natives of the United States, 2 German, 1 Irish, 1 French, and 1 Scandinavian. Five were in their first year of service, the others older soldiers. Five of the cases occurred in September, 4 each in October and November, 2 each in March, June, and July, and 1 each in May, August, and December. hree cases were reported from Fort Schuyler, 2 each from Forts Randall and Sam Houston, and 1 from each of fifteen other posts.

INFLUENCE OF SEASON ON THE SICK RATES.

Excluding venereal diseases, alcoholism, vaccina, and injuries as uninfluenced by season, the average monthly rate of admission was 75.31 per thousand ot strength. In January the rate was highest, 118.41, from a prevalence of influenza and bronchitic attacks. In February and March the rates dropped to 80.93 and 78.30. During the next four months they fell below the average, 64.63, 67.69, 67.82, and 73.20, rising to 75.97 and 77.24 in August and September, and again dropping during the next three months to 66.36, 64.26, and 69.50. The average noneffeciency was 25.70 per thousand men. For eight months, April to November, inclusive, this rate was below the average. It was highest in January, 34.46; in February, 28.91; in March, 26.80; and in December, 25.91. The lowering during recent years of the rate of malarial fevers has altered the seasonal curves of disease in the Army very sensibly. As may be seen above, the vernal rise from intermittent fever no longer exists, and the wave of prevalence of malarial and diarrheal diseases spreading over August and September is now reduced to relatively small proportions.

INFLUENCE OF AGE, ARM OF SERVICE, NATIVITY, AND LENGTH OF SERVICE ON LIABILITY TO DISEASE.

In the report for the year ending June 30, 1891, was published series of tables showing for the year the relation of certain speci diseases and classes of disease to arm of service, length of servi country of nativity, and age of the soldiers composing the Army. Th rates of admission, noneffeciency, discharge, and death in those tab were necessarily of little value on account of the small number of m under observation in many of the headings, the aggregate of the Ar having amounted to only 26,684 officers and men. Nevertheless so interesting points were developed. In the case of typhoid fever, me between 20 and 24 years of age had the highest rate of admissi young officers were more susceptible to attack than enlisted men of same age, and cavalry officers more than their comrades of the infan or artillery. From malarial fevers the cavalry suffered more than other arms; the officers less than the men. The rates for vene diseases were highest among recruits; higher in the artillery than in other arms of the service. The rate of alcoholism was highest am the Irish, as was also that of pulmonary consumption, etc.

Appended to the present report is a similar series of tables bas upon the statistics of the calendar years 1890, 1891, and 1892. observations which furnished the data covered a period of three ye but the ratios given are the average annual rates for the period. change in the personnel of our small Army takes place so rapidly account of the short term of service, discharge by purchase, deser and other drains that the ratios may be regarded as the annual ra an army of 80,005 men instead of the average annual rate of o 26,668 men for a period of three years. The tables are there of greater value than those formerly published, although the ab figures under many of the headings are yet too small to be used fo calculation of ratios. A long series of years will be required to o rates that will give expression to the relative liability of the var component parts of our Army to specified diseases. The following ulation concerning the 80,005 men will enable those interested to an idea of the value to be attached to the rates given in the t

At the same time it has a value of its own as showing the constitution of our Army from the several points of view:

Arm of service.	Officers.	Enlisted men.	Per cent.
Infantry	2,548	32,629	43.97
Cavalry	1,272	18,713	24.98
Artillery	850	9,241	12.61
Ordnance	173	1,282	1.82
Engineers	346	1,318	2.08
Medical	551	2,251	3.50

Arm of service.	Officers.	Enlisted men.	Per cent.
Recruits	....	5,421	6.78
All others	612	2,798	4.26
Total	6,352	73,653	100.00
	80,005		....

Age.	Officers.	Enlisted men.	Per cent.
19 years and under	....	1,185	1.48
20 to 24 years	321	21,504	27.28
25 to 29 years	1,026	21,789	28.52
30 to 34 years	945	12,924	17.34
35 to 39 years	958	6,681	9.55
40 to 44 years	735	5,190	7.41
45 to 49 years	807	3,180	4.98

Age.	Officers.	Enlisted men.	Per cent.
50 to 54 years	891	951	2.30
55 to 59 years	501	195	.87
60 years and over	168	54	.28
Total	6,352	73,653	100.00
	80,005		....

Nativities.	Officers.	Enlisted men.	Per cent.
United States:			
White	6,025	37,047	53.84
Colored	....	7,028	8.78
Indian	....	1,096	1.37
Total	6,025	45,171	63.99
Irish	132	9,453	11.98
German	57	8,910	11.21
English	45	2,811	3.57
Canadian	27	1,395	1.78
Scandinavian	6	1,500	1.88

Nativities.	Officers.	Enlisted men.	Per cent.
Scot	21	654	.84
Swiss	6	636	.80
Austrian	3	777	.98
Dane	3	708	.89
French	12	297	.39
All others	15	1,341	1.71
Total	6,352	73,653	100.00
	80,005		....

Length of service.	Officers.	Enlisted men.	Per cent.
Under 1 year	120	14,745	7.93
Over 1 year	6,232	58,908	92.07
Total	6,352	73,653	100.00
	80,005		....

The admissions for all diseases and injuries among these 80,005 officers and men were equivalent to the annual rate of 1,339.51 per thousand of strength. Among officers the rate was only 855.29, as compared with 1,370.81 among the men; in the infantry 1,269.10, but considerably higher in the cavalry, artillery, and engineers. Men between 25 and 29 years gave about the average rate; below this age the rates were higher; above it they were correspondingly reduced. Nativity does not appear to have had much influence in determining this general rate of admission; but, classing the troops by their length of service, it is found that those under one year had a rate of 1,914.42, while those over one year had only 1,205.37.

The nonefficiency or number constantly sick per thousand of strength s the best measure of the sickness affecting military bodies. The verage rate of the army was 41.43. Officers, although occasioning ewer admissions than enlisted men, considerably augmented the averge rate by the longer duration of their cases. Officers of infantry ad a rate of 57.07, of cavalry 67.23, of artillery 55.50. The enlisted men of the cavalry, artillery, engineers and recruits had the rates

3 or 4 units higher than the average; the other corps correspondingly lower.

The most interesting point developed by this inquiry is shown by the rates for the various ages. The nonefficient rate for the period between 25 and 29 years is about the average; it is much higher below 25 years, but beyond 29 years it decreases, being still below the average during the period between 45 and 49 years. Over 50 years the nonefficiency is high—54.67 between 50 and 54; 58.04 in the next five years; and 72.42 over 60 years. In regard to age the rates for death and discharge follow in a general way the track of nonefficiency. The average death rate, 7.72, runs up with advancing years to 11.4 between 40 and 44, 13.54 between 45 and 49, and 17.92, 28.74 and 45.05 in the succeeding periods, the average rate of discharge, 21.22, holds good among the men from 25 to 50 years of age; it is higher among younger men, and over 50 becomes doubled, trebled, and quadrupled. It is thus clearly shown that the best service is had from men between 25 and 50 years of age. This has a bearing on such propositions as that of limiting the period of service of the enlisted men to ten years, or that of enlisting only young men for the sake of a military training.

The average admission rate for typhoid fever, 5.06 per thousand of strength, was raised to 7.39 in the cavalry arm. It was 11.07 among men below 20 years of age, and 8.65 in those from 20 to 24; from 25 to 29 the average rate prevailed, but beyond that age the rates fell off, as was to be expected from our knowledge of the influence of age on the susceptibility to this disease. The rate for soldiers under one year of service was double that of their more seasoned comrades. Canadians, Scandinavians, Danes, and Austrians had high rates, due perhaps to the small numbers involved in the calculation.

The young soldiers appear to have been also more susceptible to the attack of influenza. The total number of cases, 8,950, caused an admission rate of 149.49 among men of less than one year of service: 119.05 among the others. So also with measles and mumps, the only other specific febrile diseases that had any notable prevalence; the admission rate for the former among the young soldiers was 20.64, while among the older men it was only 2.53; for the latter the rates were 8.82 and 1.97.

Pulmonary consumption was more prevalent among the engineers than in the other arms of the service; admission rate 4.86, as compared with the Army rate, 3.53. It was relatively more frequent among the men under 20 years of age and in those of less than one year of service. Increased susceptibility appears on the record as affecting those of Scandinavian, Scotch, and French nativity.

The admission rate for pneumonia, 3.88, was exceeded in the ordnance, the cavalry, and among the recruits; also among men under 20 and among those over 45 years of age. The Scandinavians and native Americans appear to have been most susceptible to attack.

Rheumatic affections were of more frequent occurrence in the engineer, ordnance, and cavalry corps than in the Army generally, the rate of admission having been 76.74 for the Army and 91.62, 102.71, and 110.85 respectively for those stated. Men from 30 to 34 years of age had the average rate; younger men suffered less and older men more in proportion to their age, the rate among men from 55 to 59 years having been 170.82. Nonefficiency varied in a similar way from 3.66 per thousand in the Army to 18.38 per thousand among men of the age last mentioned.

Rheumatic fever, however, did not follow the general course. The medical department and recruits suffered most; young men under 20 years and men over 40 suffered more than those of the intervening ages. Swiss, Scandinavians, and Canadians appear from the statistics to have been more susceptible than men of other nativities.

Chronic rheumatism caused relatively more admissions from the ordnance and engineers than from the other corps, and the older the men the greater their susceptibility to attack or recurrence. The discharge rate of the Army on this account was 0.76, but among men from 50 to 54 years it was 4.21, and among those of the next quinquennial period it was as high as 20.51.

Tonsillitis, according to the records, is distinctly a disease of young men. The rate drops to the average at 30 years, and after that susceptibility diminishes rapidly as age increases.

Malarial diseases were of more frequent occurrence in the artillery and cavalry than in the other arms of service; the admission rate of the Army was 73.11; of the artillery, 104.06; of the cavalry, 99.74. Cavalry officers suffered less than their men, but more than the officers of the other corps. Soldiers under 25 years suffered most; after that period of life susceptibility appears to decline.

Diarrheal diseases were much more prevalent among the enlisted men than among officers, and more in the engineers and artillery than among the others. They affected men of all ages, but those under 25 years of age had the largest rates.

Venereal diseases prevailed beyond the average among the recruits and the enlisted men under 30 years of the ordnance and artillery.

Diseases of the respiratory system gave the highest admission rates in the ordnance, artillery, and engineers in young men under 25 and in old men over 50 years of age.

Diseases of the circulatory system were common to all ages, but the rates increased notably after 40 years.

Diseases of the digestive system were as common among officers as among men, and were of more frequent occurrence among the engineers and cavalry than in the other arms of the service. Men under 25 years had the highest rates.

The average admission rate for injury was 248.43; 260.08 among the enlisted men; 68.47 among officers. The cavalry had the highest rate, 356.49; the medical department the lowest, 42.28. Men from 20 to 24 years suffered most, the liability decreasing with age.

INDIAN PRISONERS.

The Apache Indian village at Mount Vernon Barracks, Ala., consists of frame buildings 28 by 28 by 12 feet, arranged in streets on the sides of a central square. The village and its surrounding grounds are horoughly policed every day and the sweepings removed and burned. The prisoners are well fed, well dressed, and seem contented with their ondition. Diarrhea among the children and consumption among the dults have been exceedingly fatal, but improved sanitary conditions re manifesting their influence in the diminished prevalence of these disases.

CIVILIANS.

Deaths among civilians and their causes are shown in the following table:

Diseases.	Adult males.	Adult females.	Children.	Total
Acute febrile and infectious diseases	3		24	27
Constitutional	4	6	16	26
Developmental		1	5	6
Nervous system, diseases of	3	15		18
Respiratory	4	16	21	41
Circulatory	2	5		7
Digestive	1	2	25	28
Urinary	3	1		4
Locomotor system			1	1
Integumentary			1	1
Diseases of the nose		1	1	2
Peritonitis	1	4	1	6
Parturition and results		4		4
Total from disease	21	55	95	171
Total from injury	3	3	4	10
Unknown			2	2
Total from all causes	24	58	101	183

MARRIAGES AND BIRTHS.

On the reports were noted 48 marriages, 8 of officers, 37 of enlisted men, 3 of civilian attachés.

The births reported numbered 474—male, 247; female, 227. Eighty-seven were children of officers; 329 of enlisted men; 58 of civilians. Nineteen Indian children, 9 males and 10 females, born at Mount Vernon Barracks, Ala., are included in the total.

List of special reports received from medical officers during the calendar year 1892.

MEDICAL REPORTS.

Name.	Rank.	Report.
Borden, W. C	Captain and asst. surgeon	Bright's disease; death; autopsy.
Byrne, C. B	Major and surgeon	History of specimens sent to Army Medi Museum: (1) Lower end of sternum. (2) Vermiform appendix of unusual length. Kidney; double ureter. (4) Carcinoma of stomach. (5) Stomach; cicatricial contraction of pylorus. (6) Indian skull.
Cleary, P. J. A	do	Tuberculosis, left lung; death; autopsy. Tubercular ulceration of large intestine, death; autopsy.
Clendenin, Paul	Captain and asst. surgeon	Disease of the eye; malingering. Subacute inflammation of retina.
Egan, P. R	do	Rubeola; 12 thermographs.
Gardner, E. F	do	Paretic dementia.
Girard, A. C	Major and surgeon	Typhoid fever; death; autopsy; thermograph. Carcinoma of stomach; death; autopsy. Uræmia; death; autopsy.
Harvey, P. F	do	Chronic myelitis; death.
Hoff, J. Van R	do	Chronic dysentery.
Hubbard, V. B	do	Chronic albuminuria; polyuria; death; thermograph.
Kean, J. R	Captain and asst. surgeon	Simple continued fever; thermograph. Syphilis.
Kimball, J. P	Major and surgeon	Screw worms (maggots) in nose.
Mason, Charles F	1st lieut. and asst. surgeon	Cutaneous eruptions in influenza. Relative to the introduction and spread of demic catarrhal fever at Fort Washakie, W Heart disease, tricuspid insufficiency and dilation of right ventricle and auricle; death; autopsy.
O'Reilly, R. M	Major and surgeon	Typhoid fever; death; thermograph.

List of special reports received from medical officers, etc.—Continued.

MEDICAL REPORTS—Continued.

Name.	Rank.	Report.
Pilcher, James E	**Captain and asst. surgeon**	**Acute catarrhal fever; 4 cases, with thermographs.**
		Remittent fever; 2 cases, with thermographs.
Powell, J. L	**do**	**Malingering.**
Rafferty, Ogden	**1st lieut. and asst. surgeon**	**Hepatic abscess, with thermograph.**
		Syphilis.
Reed, Walter	**Captain and asst. surgeon**	**Valvular disease of heart; chronic interstitial nephritis; death; autopsy.**
		Valvular disease of heart; death; autopsy.
Robinson, S. Q	**do**	**Influenza with eruption.**
		Chronic desquamative nephritis; death; thermograph.
Symington, John	**Attending surgeon**	**Variola.**
Taylor, B. D	**Captain and asst. surgeon**	**Typhoid fever; death; autopsy; thermograph.**
		Typhoid fever; thermograph.
Tesson, L. S	**do**	**On the fevers at Fort Sidney, Nebr.; 3 thermographs.**
Tilton, H. R	**Major and surgeon**	**Epidemic influenza; heart failure; death; autopsy.**
		Mumps; submaxillary gland alone affected.
Turrill, H. S	**Captain and asst. surgeon**	**Variola.**
Wakeman, W. J	**do**	**Acute pharyngitis, with destruction of soft parts.**
Walters, Fred. G	**Hospital steward**	**Epidemic of pertussis.**
Waters, W. E	**Major and surgeon**	**Pulmonary hemorrhage; death; autopsy.**
White, R. H	**do**	**Typhoid fever; thermograph.**
		Typhoid fever; thermograph.
Winne, C. K	**do**	**Peritonitis; thermograph.**
		Acute peritonitis; thermograph.
		Typhlitis; thermograph.
		Simple continued fever; thermograph.
		Pneumonia; thermograph.
Woodhull, A. A	**do**	**Nephritis; death.**
Worthington, J. C	**Captain and asst. surgeon**	**Tuberculosis; right lung.**

SURGICAL REPORTS.

Birmingham, H. P	**Captain and asst. surgeon**	**Irreducible umbilical hernia, omental; operation.**
Bushnell, G. E	**do**	**Gunshot fracture of tibia.**
Cabell, J. M	**do**	**Amputation at knee joint.**
Carter, E. C	**do**	**Amputation of right leg above the ankle.**
Clark, Jos. T	**1st lieut. and asst. surgeon**	**Severe scald of body; 2 cases, 1 death.**
Clendenin, Paul	**Captain and asst. surgeon**	**Alcoholism; found drowned.**
Girard, A. C	**Major and surgeon**	**Traumatic epilepsy; insanity.**
Glennan, J. D	**1st lieut. and asst. surgeon**	**Fracture of cervical vertebra.**
Gorgas, W. C	**Captain and asst. surgeon**	**Laparotomy; 4 cases.**
Happersett, J. C. G	**Major and surgeon**	**Shot wound, thigh.**
Harvey, P. F	**do**	**Lacerated wound of scalp.**
		Shot wound of bladder; death.
Jarvis, N. S	**Captain and asst. surgeon**	**Stab wound of back; 2 cases.**
Lauderdale, J. V	**Major and surgeon**	**Lacerated wound, amputation of right arm.**
Maus, L. M	**do**	**Rupture of liver; death; autopsy.**
Rafferty, Ogden	**1st lieut. and asst. surgeon**	**Cystic sarcoma, left testicle.**
Reed, Walter	**Captain and asst. surgeon**	**Shot wound of chest; death; autopsy.**
Tilton, H. R	**Major and surgeon**	**Tonic spasms of voluntary muscles, reflex irritation.**
		Contusion of right testicle.
Walters, Fred. G	**Hospital steward**	**Fracture of femur.**
Wilcox, T. E	**Major and surgeon**	**Injury of finger, right hand.**
Winne, C. K	**do**	**Shot wound, left eye.**
Wood, M. W	**Captain and asst. surgeon**	**Shot wound of pelvis.**
Woodhull, A. A	**Major and surgeon**	**Motor paralysis of left arm; result of injury.**
Worthington, J. C	**Captain and asst. surgeon**	**Shot wound of pelvis.**

SURGICAL OPERATIONS.

During the year the Medical Department of the Army reported 197 surgical operations, 70 of which were necessitated by injuries and 127 by disease. The number, character, and results of these are shown in the following statement:

Nature of operation.	Disease or injury.	Total.	Recovered.	Died.	Remarks.
Removal of tumors		**22**			
Enucleation	Sebaceous, 9; encysted, 5; lipoma, 4; fibroid, 1; epithelioma, 1; chalazion, 1; myoma, 1.	22	22		Scalp, 3; face, 7; neck 4; back, 4; arm, 3, foot, 1.
Opening of abscesses		**11**			
Incision	Chronic, 1; perityphlitic, 1; bursal, 1; adenitis, 1; cellulitis, 1; caries, 1; etc., 5.	11	11		Perineum, 5; neck, 2; groin, 2; abdomen, 1 knee, 1.
Operations on the eye		**6**			
For pterygium		5	5		
Enucleation		1	1		
Operations on the ear		**1**			
Evulsion	Polypus	1	1		
Operations on the nose		**1**			
Excision	Deformed septum	1	1		
Operations on the mouth		**3**			
Removal of tonsils	Tonsillitis, 1; pharyngitis, 1; hypertrophy, 1.	3	3		
Operations on veins		**5**			
For varicocele		4	4		Ligature.
For varicose veins		1	1		Do.
Operations on nerves		**1**			
Stretching	Neuralgia	1	1		Ulnar.
Operations on the respiratory organs.		**2**			
Paracentesis	Pleurisy	2	2		
Operations on the digestive organs.		**19**			
For fistula in ano		4	4		
For fissure of anus		3	3		Incision, 1; dilatation 2
For hemorrhoids		9	9		Ligation, 6; incision 3.
For paracentesis	Anasarca, 1; tumors, 2.	3	3		
Operations on the lymphatic glands.		**6**			
Removal of glands	Venereal, 3; adenitis 3.	6	6		
Operations on the urinary organs.		**11**			
For stricture of urethra					
Internal urethrotomy	Gonorrheal, 7	7	7		
External urethrotomy	Chronic cystitis, 1	1	1		
Dilatation	Gonorrheal, 3	3	3		
Operations on generative organs.		**16**			
For phymosis	Syphilitic, 6; gonorrheal, 3; congenital, 3.	12	12		Circumcision.
Testicles	Injury, 2; disease, 2.	4	4		Castration.
Operations on bones		**9**			
Removal of portions	Fracture, 6; necrosis, 3.	9	9		Cranium, 1; maxilla 1; tibia, 1; metacarpal, 3; phalangeal, 3
Operations on joints		**27**			
Reduction of dislocations		24	24		Shoulder, 18; elbow, 4; wrist, 1; ankle 1.
Removal loose bodies		3	3		Knee-joint.
Operations on limbs		**37**			
Amputation for injury:					
Shoulder joint	Shot	1		1	Primary.
Arm	Fracture	2	1	1	Secondary.
Fingers	Shot, 10; injury, 7; frost-bite, 1.	18	18		Primary, 10; secondary, 8.
Thigh	Fracture	2	2		Secondary.
Knee-joint	Fracture	1	1		
Leg	Shot, 2; injury, 3; frostbite, 1.	6	5	1	Primary, 4; secondary, 2.
Toes	Shot, 1; injury, 3	4	4		
Amputation for disease:					
Forearm		1	1		
Finger		2	2		
Operations on muscles and tendons.		**4**			
Tenotomy		2	2		
Sutures		2	2		
Operations on skin, etc		**16**			
Ingrown nails		16	16		
Aggregate		197			

As connected with the surgical work of the year, and of especial interest to military surgeons at this time when a radical change is in progress in the character of the missiles that will produce the gunshot wounds of future battle-fields, I desire to invite attention to the report of a series of experiments conducted at Frankford Arsenal, Pa., by Capt. L. A. LaGarde, in connection with the Ordnance Department of the Army. The weapons used in the experiments were the Springfield rifle, caliber .45, and an experimental Springfield, caliber .30, the former giving an initial velocity of 1,301 feet to 500 grains of compressed lead of cylindro-conoidal form, cannelured and lubricated, the latter impressing a velocity of 2,000 feet on a bullet weighing 220 grains, and consisting of lead incased in a jacket of German silver. The penetration of the latter was found to be greater than that of the old arm and bullet at all ranges, and the amount of shock correspondingly less. Explosive effects at short ranges differed but little for the two projectiles, but the explosive zone of the smaller bullet extended to 350 yards, or 100 yards farther than the other. Beyond the limits of the explosive zone the destructive effects of the smaller bullet became less than those of the larger, and this difference was especially noticeable from the 500 to the 1,500 yard ranges, and in the wounds inflicted on the joints and soft parts. The lessened severity of wounds at these ranges is attributed in part to the small amount of flattening or other deformation found in the jacketed bullet after impact even with bone. At longer ranges, where velocity became lessened, the small bullet again produced extensive comminution of bones and disorganization of soft parts, attributed to a sideways impingement. Dr. LaGarde's experiments show that the heat imparted to a projectile by the ignition of the powder, the resistance in the barrel, etc., has been much exaggerated. It is certainly insufficient to render a bullet aseptic. Lesions in wounds can not be attributed in any way to the heat imparted by the bullet, but they may be caused by septic infection before firing. Of the jacketed missiles the cupro-nickeled steel bullet is certainly the best, as its mantle does not part from its nucleus on impact with bone. As its penetration is not lessened by deformation its military efficiency is greater than that of other missiles; and while it is capable of disabling more men than a bullet, which becomes impaired in form, the wounds occasioned by it are less destructive to the individual.

REPORT OF CAPT. L. A. LAGARDE.

In accordance with a manuscript order dated Adjutant-General's Office, Washington, D. C., July 20, 1892, which directs me to proceed to Frankford Arsenal, Pa., for the purpose of conducting, in connection with the Ordnance Department of the Army, certain experiments touching upon the "effects of small-arm firing with new calibers and velocities on the human frame," I have the honor to report as follows:

In order to make the results more apparent we followed the plan of—

(1) Noting the effects of a projectile of larger caliber and lower velocities upon different parts of the human body at various ranges.

(2) Noting the effects of the projectile of the smaller caliber and greater velocities upon similar parts of the human body, or parts offering about the same resistance at similar ranges.

The larger caliber weapon selected was the Springfield rifle, caliber .45, the gun which has formed the armament of our foot troops since 1874. The smaller caliber weapon furnished, and to which our experiments were especially directed, is known as the Experimental Springfield rifle, caliber .30.

The following is a description of the more important ballistic properties of these weapons, as kindly furnished by authority of the Chief of Ordnance, U. S. Army.

"The Springfield rifle is a .45 caliber gun, the projectile of which has an initial velocity of 1,301 foot seconds. Its projectile is made of compressed lead, cylindro-conoidal, cannelured and lubricated, weighing 500 grains, impressed by 70 grains black rifle powder.

"The Experimental Springfield rifle is a .30 caliber gun, the projectile of which has an initial velocity of 2,000 foot seconds. Its projectile is made of a German silver jacket filled with a core of lead, and is not cannelured or lubricated."

The velocity and energy of the projectiles of the two weapons at different ranges are as follows:

Velocities of the projectiles of the two guns.

Name and caliber of weapon.	Initial velocity.	500 yards.	1,000 yards.	1,500 yards.	2,000 yards.
	f. s.				
Springfield, caliber .45	1,301	873	676	531	[illegible]
Experimental Springfield, caliber .30	2,000	1,103	804	627	[illegible]

Energy of the projectiles.

[In foot pounds.]

Name and caliber of weapon.	Initial velocity.	Weight.	Muzzle.	500 yards.	1,000 yards.	1,500 yards.	2,000 yards.
	f. s.	*Grains.*					
Springfield, caliber .45	1,301	500	1,879	846	507	313	[illegible]
Experimental Springfield, caliber .30	2,000	220	1,954	594	315	192	[illegible]

It will be seen by the first table that the initial velocity of the smaller caliber projectile is far greater than of the larger caliber, and that the striking velocity at all the ranges is greater.

The penetrations of bullets are proportional to the squares of their striking velocities, for equal velocities the penetration is proportional to the density of section. The form of the bullet and its power to resist deformation have a powerful influence. The penetration of the 220 grain bullet is greater at all ranges.

This quality of penetration in projectiles is always of great interest to surgeons, and it becomes especially so in this instance, since it depends to a material extent, as far as the human body is concerned, upon the almost indestructible hardness of the projectile.

From the experiments which have been conducted at Frankford Arsenal, to be described in detail later on, we are warranted in stating that the penetration of the projectile of the Experimental Springfield rifle is equal to that possessed by the projectiles belonging to the small caliber rifles now used by all the foreign powers. Chauvel and Nimier, Traité Pratique de Chirurgie d'Armée, 1890, state as a result of extensive experiments with the Lebel, the portable gun of the French army, that "its projectile has velocity and penetration sufficient to make it redoubtable for the human body at 2,775 yards."

The penetration at the different ranges was obtained as follows: A Le Boulengé chronograph was used—the distance between first and second targets being 100 feet, and the first target being 3 feet from the muzzle. Thus the velocity recorded was that at 53 feet from the muzzle. The remaining velocities of both bullets used (500 grains, .45 caliber, and 220 grains, .30 caliber) were computed for the desired ranges by the methods given in Ingall's Exterior Ballistics. To find the penetration at a given range, say 1,000 yards, the procedure was as follows: The remaining velocity at this range computed as above, was found to be 676 foot seconds for the 500-grain bullet. The charge of powder was successively reduced until a charge was found which gave at 53 feet from the muzzle a velocity of 676 foot seconds. Cartridges were made up with this charge, and the cadaver to be fired at was placed at 53 feet from the muzzle. The striking velocity of the bullet being the same as that of a bullet fired with the full charge and striking an object at 1,000 yards distance the penetration would also be the same. At the ranges (1,500 and 2,000 yards) it was found necessary, in order to record the low velocities obtained, to reduce the distance between targets to 50 feet, which caused the velocity to be determined at 28 feet from the muzzle. At these ranges, therefore, the cadavers were placed 28 feet from the muzzle. A tackle was provided for traversing the cadavers and bringing the portion of the body to be fired at into proper position. Barrels filled with sawdust were placed behind the cadaver experimented with, to catch the bullets and preserve them from deformation other than that received in their passage through the body. Each bullet was marked on its base with a number or letter, for the purpose of identification, and after firing at each range the bullets were collected.

Before proceeding with the notes upon the gunshot injuries observed, I wish to give some facts upon the subjects of impact and explosive effects by the projectiles of the two weapons.

Impact.—The shock as shown by the oscillation of the limb, when a resistant bone was hit, was always greater with the leaden bullet of .45 caliber than that of the smaller bore gun; on the other hand, the difference was reduced to a minimum, when the soft parts alone were hit. It often happens that the occurrence of a fracture by the smaller projectile was determined only after a careful examination of the wound. This difference in shock was noted at all the ranges, but especially so after the 500 yards range.

The minimum amount of shock for the smaller projectile depends upon the superior penetration, which, as stated already, is due to its smaller caliber, greater velocity, and last, but not least, the fact that it preserves its shape unaltered. The fact that the caliber alone of the .45 caliber Springfield was greater, would be cause sufficient for a greater amount of shock upon impact; since, however, deformation is the first thing that happens, when the leaden bullet collides with a resistant bone, part of the energy is consumed in the flattening, and the rest is conveyed to the part struck in the form of shock. The difference in the amount of shock is at once suggested in table No. 2, already cited. It will be seen that the striking energy in foot pounds for all the ranges is greater with the projectile of the .45 caliber Springfield rifle. Delorme and Chavasse, who have experimented a great deal with the 8 m. m. gun of the French army, while commenting upon similar experience, express the opinion that the general as well as the local shock will be less with the new projectiles having metallic mantles.

Explosive effects.—The explosive effects caused by the projectile of the Springfield rifle were noticed up to 200, and in some instances to 250 yards, whilst the explosive effects of the projectile of the experimental Springfield rifle extended in some instances as far as the 350 yards range.

The term "explosive effects" is somewhat confusing, as it is apt to convey the idea that the wound was caused by an explosive bullet. It is a term that doubtless owes its origin to the similarity in the appearance of the two wounds. When we say that a wound shows explosive effects, we mean that it appears as though it had been caused by an explosive bullet. There are no special features as a rule to describe about the wound of entrance, except the appearance at times of bony sand in the tract leading to a fractured bone. When a resistant bone has been hit, the foyer of fracture will show great loss of substance, the bone will have been very finely comminuted, the pulverized bone will have been driven not only in the direction in which the projectile was traveling, but in all directions, and the pulpification of the soft parts will not only be limited to the track of the bullet, but the utter destruction is noticed some distance into the tissues. The wound of exit appears like a bursting forth of the skin; the track leading to the bone is conical in shape, the base of the cone corresponding to the wound of exit in the skin and the apex to the seat of fracture.

The degree of explosive effects corresponds to the velocity of the projectile at the moment of impact, and the resistance offered by the part hit.

The bony structures are not alone in showing explosive effects with high velocities. In a recent lecture Dr. Johann Habart, royal and imperial regimental surgeon of the Austrian army, states that he found explosive effects with the projectile of the new Mauser up to 500 m. in "very vascular tissues, cavities filled with liquid or semi-liquid or viscous masses, such as the skull, heart, liver, spleen, kidneys, stomach, intestines, and bladder, which have been attributed by some observers to hydraulic pressure."

In order to test the influence of hydraulic pressure in causing explosive effects, some interesting experiments were conducted at Frankford Arsenal.

1. Empty powder cans were fired into at various ranges. The orifices of entrance and exit were found proportional to the size of the projectiles employed. The cans were not deformed—showed no explosive effects.

2. A half dozen or more powder cans from the same lot were filled with wet sawdust. The cans were fired into at various ranges. The orifice of entrance in each case presented no special features. The orifice of exit, however, for both projectiles was marked by a bursting forth of the tin and loss of the contents. The cans had expanded as if by an internal force, which had been exerted in all directions. The explosive effects were about the same for both bullets.

3. Another lot of powder cans of the same size and dimensions was filled with water and fired into. The results were quite similar to those found with the wet sawdust, only more extensive, and they were about equal for the two projectiles.

Notes of gunshot injuries on the human body, conducted at Frankford Arsenal, Pa., on March 18, 1893, with the large and small caliber projectiles, for the purpose of noting the explosive effects at relatively short ranges.

I. Gunshot injury, left humerus, at junction of middle and lower thirds; bullet, No 4, caliber .45; range, 17 yards. The wound of entrance is oval, 0.55 inch in its greatest diameter. The wound of exit is marked by a chasm on the back of the arm 4 inches in length, 2.36 inches in width, the edges of which are ragged. There is eversion of muscle and fat. The soft parts contain minute fragments of bone, which have been driven some distance into the tissues. The bullet struck the humerus at the junction of the middle and lower thirds. The foyer of fracture shows a loss of substance of the shaft 1.60 inches in length. There is extensive comminution. The fragments (twenty-three being readily counted) are greatly displaced, and the majority of them are free from the periosteum. The bullet is very much mushroomed, having lost about one-half in weight.

II. A gunshot injury by the .30-caliber projectile, at the same range, on the opposite arm produced a wound of entrance which is round, 0.35 inch in diameter. The wound of exit is 4.30 inches in length and 2.36 inches in width. It is marked by pulpification of the muscles, which contain bony sand. The missile struck the shaft of the humerus above the middle, comminuting the bone extensively, but not to the extent observed in the preceding injury with the .45-caliber leaden projectile. Fourteen principal fragments were readily counted. They are large, and not so much displaced as in the injury on the left humerus The larger fragments are retained in place by their periosteal attachment. The fissures are not so extensive in the shaft above and below the seat of injury. The projectile was recovered, the leaden nucleus having escaped from the harder metallic mantle. The cylindrical part of the envelope is intact, the conical end having split in four pieces, one of which is entirely detached from the shell.

III. Gunshot injury of the left tibia, middle third; bullet No. 5, caliber .45; range, 17 yards. The wound of entrance is round, 0.45 inch in diameter; the wound of exit is marked by a longitudinal tear in the calf 3.16 inches in length and 1,18 inches in width. The bullet struck the shaft of the tibia at the junction of the middle and upper thirds, shattering the bone extensively. The seat of comminution measures 4.30 inches; the fragments, which are all detached, have been displaced backward Large numbers of fine spiculæ of bone have been driven into the muscle of the calf. The soft parts are reduced to a pulp-like mass some distance beyond the walls of the chasm like opening. The fibula is broken at the same level. The projectile was split into two lateral halves at the conical end, one of which was lost, whilst the other remains attached to the cylindrical portion.

IV. A gunshot injury by the .30-caliber projectile at the same range on the opposite tibia shows a wound of entrance which is round, 0.30 inch in diameter, and a wound of exit which is marked by an oblique tear extending from the lower part of the popliteal space to the lower part of the calf, measuring 6.66 inches in length and 2.36 inches in width.

The bullet collided with the tibia at its inner border 4.30 inches below the knee-joint, comminuting the shaft. Upon removing the skin the wound of entrance is seen to be filled with bony sand, the periosteum over the crest of the shaft is partly torn; on the outer side several large, sharp splinters of bone remain attached to the periosteum; the posterior wall of the shaft below the popliteal space, 2 inches in extent vertically, has been entirely destroyed and spiculæ of bone and medulla are seen in the lacerated muscle of the calf. The fibula is fractured in two places just above the level of the fracture in the tibia. The muscle of the calf has been reduced to pulp.

The projectile was very much deformed; but one fragment of the metallic mantle was recovered, measuring 0.79 inch in length and 0.39 inch in width. The leaden nucleus was mushroomed and is only half the original length.

It will be seen from the foregoing that the explosive effects at short range differ but little for the two projectiles, and that they are always enormous.

Notes on the effects of the projectiles of large and small caliber impressed by the velocity possessed at 100 yards, on the human body, conducted at Frankford Arsenal, Pa., January 10, 1893.

I. Gun-shot injury of the lower part of the left femur; bullet No. 4, caliber .45; soft parts frozen. The wound of entrance is marked by a V-shaped tear, each side of the V being 2.75 inches in length; the wound of exit is round, 1.57 inches in diameter. It is funnel-shaped, the base of the funnel corresponding to the skin, and the apex to the point of destruction in the bone. The soft parts adjacent to the track of the bullet are a pulpified mass mixed with finely pulverized bone. One and a half inches of the external half of the shaft immediately above the articular surface have been carried away. The remaining part of the shaft is separated from the articular surface by a transverse fissure, whilst an oblique fissure extends into the shaft above, 2.75 inches in length. The upper and external quadrant of the patella was chipped. Strange as it may seem, there is no fissuring into the joint. The bullet was mushroomed and bent to one side.

II. Gunshot injury of the right femur; bullet No. 3, caliber .30. The soft parts were frozen, on account of which the explosive effects at the wounds of entrance and exit were enormous. The projectile entered the femur just above the epiphyseal junction of the internal condyle and emerged posteriorly on a horizontal line, making an orifice 0.28 inch in diameter upon entering, and 0.39 inch in diameter upon leaving the bone. The track of the bullet in the bone and between the point of leaving the bone and the wound of exit is lined with bony sand. There is a fissure scarcely visible to the naked eye running downwards and from before backwards through the articular surface, separating the two condyles almost equally. There is also a subperiosteal fissure 1.57 inches long running upwards from the point of emergence in the bone. There are a few small splinters of bone near the wound of exit still attached to the periosteum. The projectile was not deformed.

III. Gunshot injury of the upper third of the right femur; bullet No. 6, caliber .45. The wound of entrance is round, 0.47 inch in diameter; the wound of exit is ragged, quadrilaterally shaped, 0.79 inch in its longest diameter. The track of the wound from the bone posteriorly to the wound of exit is one pulpified mass, in which are found bony sand and many free splinters of bone. There are a number of fissures in the ends of the broken shaft; the longest in the upper fragment is 3.54 inches, extending to the anatomical neck. The projectile was very much set up.

IV. Gunshot injury of the left humerus at the junction of the middle and upper thirds; bullet No. 8, caliber .45. The wound of entrance is round, 0.47 inch in diameter; the wound of exit is marked by a longitudinal tear, 3.15 inches long. The track of the wound between the posterior surface of the bone and the wound of exit contains a number of free splinters of bone. The lower fragment of the shaft shows one longitudinal fissure, 3.54 inches in length; the upper fragment has two longitudinal fissures, the larger being 1.57 inches in length. The projectile is mushroomed.

V. Gunshot injury of the middle third of the right humerus; bullet No. 9, caliber .30. The wound of entrance is round, 0.28 inch in diameter; the wound of exit is marked by a longitudinal slit, 1.18 inches in length. The bone is fractured by a number of longitudinal and transverse fissures. The fragments, which are five in number, vary from 0.39 to 1.57 inches in diameter, and though separated from the periosteum on the shaft above and below the seat of injury they remain in situ. It is not possible to locate the point of impact, and the fracture appears to have been caused by concussion. The bullet is not in the least deformed.

Notes on the effects of the projectiles of large and small caliber impressed by the velocity possessed at 150 yards, on the human body, conducted at Frankford Arsenal, Pa., January 10, 1893.

I. Gunshot injury of the middle third of the left tibia and fibula; bullet No. 2, aliber .45. The wound of entrance is oval, 0.51 inch in its greatest diameter; the vound of exit forms a chasm in the calf, showing great destruction of the soft parts nd a bursting forth of the skin, 5.91 inches in the longitudinal and 3.15 inches in he transverse diameter. The wall of the chasm is lined with bony sand and four ree splinters are found near the surface, the largest being 1.57 inches in length. he fibula was fractured on a level with the seat of injury in the tibia. The bullet mushroomed.

II. Gunshot injury of the middle third of the left tibia and fibula; bullet No. 1, aliber .30. The wound of entrance is round, of the same diameter as that of the issile; the wound of exit is triangular in shape, the apex of the triangle ending in longitudinal tear, which extends 3.54 inches in the lower part of the calf. The pace between the posterior surface of bone and the wound of exit contains no fragents; the fragments at the seat of the fracture are small, with one exception, and ttached to the periosteum. The exception referred to is a splinter, 3.94 inches long, 79 inch wide, composed of crest of tibia. The bullet was bent upon itself, and ightly flattened at the conical end.

III. Gunshot injury of the lower third of the right femur; bullet No. 3, caliber 5. The wound of entrance is round, and it is similar in diameter to the diameter of e missile; the wound of exit is triangular, 1.18 inches in length; the projectile rried away the inner tuberosity, striking 0.79 inch above the articular surface front, guttering the bone, causing no fissuring in the joint nor in the compact ructure above, excepting in the popliteal space for a distance of 0.79 inch above e internal condyle and extending nearly to the outer condyloid notch. The space tween the posterior surface of the femur and the wound of exit contains finely pulverized bone. The bullet is slightly impressed on one side at the conical end, otherwise it is not deformed.

IV. Gunshot injury of the lower third of the right humerus into the elbow joint: bullet No. 9, caliber .30. The wound of entrance is round, 0.31 inch in diameter: the wound of exit is 1.18 inches above and internal to the tip of the olecranon It is marked by a longitudinal tear, 0.79 inch in length. The projectile shattered the lower part of the shaft immediately above the spongy structure, fissuring the articular surface extensively into the elbow joint. The splinters were all free from the periosteum covering the shaft. The bullet was not deformed.

V. Gunshot injury of the middle of the left femur; bullet No. 5, caliber .45. The wound of entrance is round, 0.43 inch in diameter; the wound of exit is marked by a longitudinal slit at the posterior aspect of the thigh. 3.15 inches long, through which a mass of muscle protrudes as large as a man's fist. The track of the bullet between the posterior surface of the femur and the wound of exit is a pulpified mass mixed with bony sand, and a number of free splinters, one of which is 2.36 inches in length. The shaft above and below the seat of injury is extensively fissured, one of the fissures in the upper fragment measuring 1.97 inches in length. Aside from the longitudinal slit in the skin which marks the principal wound of exit there are two perforations internally thereto; the first has ragged edges, 0.39 inch in length, 0.31 inch in width; internal to this, in the same horizontal plane, appears the second perforation, 0.31 inch long, 0.35 inch wide. These perforations appear to have been inflicted by pieces of detached lead or fragments of bone, driven forth at the moment of impact, each acting the part of a projectile. The bullet was mushroomed.

VI Gunshot injury of the lower part of the left humerus into the elbow joint; bullet No. 6, caliber. 45. The wound of entrance is marked by a longitudinal slit, 0.79 inch in length; the wound of exit measures 1.57 inches in its widest part; it is funnel shaped, with the base of the funnel corresponding to the skin. The humerus was fractured just above the articular surface, comminuting the bone in the joint. The bullet was very much deformed laterally, being notched as if it had wrapped round a bone on impact.

VII. Gunshot injury of the left shoulder joint; bullet No. 7, caliber .30. The wound of entrance is oval, 0.51 inch in its greatest diameter. The wound of exit is round and equal to the diameter of the projectile. The bullet entered at the epiphyseal junction, separating the anatomical from the surgical neck; there is slight comminution in the joint; the shaft shows a fissure, 1.18 inches in length; there are a number of splinters adherent to the periosteum. The bullet was set up and slightly bent to one side. The tip of the conical end was driven in, making a concavity where it was convex before.

Notes on the effects of the projectiles of large and small caliber impressed by the velocity common at the range of 250 yards, on the human body, conducted at Frankford Arsenal, Pa., January 11, 1893.

I. Gunshot injury of the lower third of the left tibia; bullet No. 1, caliber .45. The wound of entrance is round, 0.43 inch in diameter. The wound of exit is in the posterior and external aspect of the lower part of the calf, marked by a longitudinal slit, which is gaping, with muscle and tendon protruding. The extreme length of the slit is 3.74 inches, and the width is 1.57 inches. The track of the bullet from the posterior surface of the bone to the wound of exit is lined by bony sand. There are nine loose splinters of bone, varying from 2.18 inches to 0.24 inch in length, and three more splinters, the largest being 1.18 inches in length, attached to the periosteum, covering the upper fragment. The fibula is fractured at the same level. The bullet was set up and bent upon its long axis.

II. Gunshot injury of the right ankle; bullet No. 1, caliber .30. The wound of entrance is 0.28 inch in diameter, 1.57 inches above and posterior to the external malleolus; the wound of exit is marked by a tear 0.35 inch long, 0.20 inch in width, 0.79 inch below the internal malleolus. The bullet entered the external aspect of the astragalus, fracturing it into four fragments. The tibia and fibula were not injured. Projectile not deformed.

III. Gunshot injury left knee joint; bullet No. 2, caliber .45. The wound of entrance is directly over the patella, 0.45 inch in diameter; the wound of exit is in the upper part of the popliteal space and as large as the thumb nail. The missile struck the center of the patella, making a radiating fracture with pulverization of the lower half of the bone. The missile traversed the lower end of the femur, entering midway between the condyles, 1.18 inches above the lower margin of the bone. The foyer of fracture is filled with innumerable splinters of bone, some of which are attached to, whilst others are free from, the periosteum. Both condyles are separated from the shaft, the outer fragment being 3.94 inches in length. The projectile was not recovered.

IV. Gunshot injury of the head of the right tibia; bullet No. 3, caliber .30. The wound of entrance is round, 0.30 inch in diameter; the wound of exit is in the popliteal space at the bend of the knee, and slightly internal to the mesial line. It has a punched-out appearance, and there is a valvular piece of skin fitting over the opening, which scarcely exceeds the diameter of the projectile. The bullet entered the bone 0.98 inch below and internal to the tuberosity of the tibia, and emerged 1.38 inches below the posterior margin of the articular surface. The track of the bullet in the bone and in the soft parts from the posterior surface of the bone to the wound of exit is lined with bony sand. The projectile perforated the bone without causing a solution of continuity. There is a fissure 2.76 inches in length extending in the shaft below. The projectile was recovered unaltered.

V. Gunshot injury of the right hip joint; bullet No. 4, caliber .30. The wound of entrance is round, 0.30 inch in diameter, 0.39 inch below Poupart's ligament, and 2.95 inches from the anterior superior spine of the ilium; the wound of exit is in the upper part of the gluteal region and internal to its middle. It is slightly irregular and scarcely exceeds the diameter of the missile. The projectile penetrated the acetabulum at its deepest portion, and furrowed the head of the femur at the attachment of the ligamentum teres; otherwise the bone is not injured. The point of entry is at the brim of the pelvis, 0.39 inch distant from the margin of the acetabulum. Three splinters of bone belonging to the brim of the pelvis and partly stripped of periosteum were found in the soft parts overlying the brim of the pelvis. The bullet, which was not in the least deformed, emerged midway between the ischium and sacrum in the great sciatic notch.

VI. Gunshot injury of the radius and ulna of the left side; bullet No. 6, caliber .30. The wound of entrance is round, 0.30 inch in diameter; the wound of exit is below and external to the olecranon; it is irregular, 0.43 inch in diameter. On removing the skin and muscle the head of the radius is found detached and split through the articular surface into two very nearly equal halves. The projectile struck the ulna and lesser sigmoid cavity, splitting the bone into three fragments. The fracture through the head of the radius is finely comminuted. No fissuring into the elbow joint. The projectile was dented on one side at the conical end.

VII. Gunshot injury of the right elbow joint; bullet No. 7, caliber .30. The wound of entrance is round, 0.30 inch in diameter; the wound of exit is distinguished by a longitudinal tear 2.76 inches in length 0.79 inch below the tip of the olecranon. The coronoid process of the ulna and the olecranon are comminuted into the joint. The projectile was slightly flattened at the conical end.

VIII. Gunshot injury of the lower third of the left humerus; bullet No. 4, caliber .45. The wound of entrance is 2.76 inches above the elbow joint; it is round, 0.43 inch in diameter; the wound of exit is marked by a longitudinal tear 2.36 inches long, and the foyer of destruction is marked by a chasm 1.57 inches in its greatest diameter. The deep fasciæ are extensively lacerated. The track of the projectile is lined with bony sand, and eleven free splinters of bone are found in the wound. The projectile was not recovered.

IX. Gunshot injury of the left shoulder joint; bullet No. 6, caliber .45. The wound of entrance is round, 0.45 inch in diameter; the wound of exit is irregular, with torn edges, 1.18 inches in its greatest diameter. The projectile passed through the upper and outer portion of the head of the humerus, separating entirely the head from the shaft at the junction of the surgical and anatomical necks. The wound is full of finely pulverized débris; one fragment, 0.30 inch in length, remains attached to the periosteum. There are two fissures on the outer surface, the longest one being 2.50 inches down the shaft. The projectile was not recovered.

X. Gunshot injury of the right humerus at the surgical neck; bullet No. 8, caliber .30. The wound of entrance is 0.30 inch in diameter; the wound of exit is crescentic in shape, 0.39 inch in its greatest diameter. The projectile passed through the surgical neck just anterior to the bicipital groove, and emerged at the lower margin of the anatomical neck. The track of the projectile at the seat of fracture and from the posterior surface of the bone to the wound of exit is marked by the presence of innumerable small splinters of bone and bony sand. The shaft of the humerus is fractured obliquely; the lowest portion of the upper fragment is 2.95 inches below the upper margin of the greater tuberosity. The projectile is flattened obliquely at the conical end.

XI. Gunshot injury of the skull; bullet No. 7, caliber .30. The projectile entered the left eye near the outer canthus, perforating the eyeball; ranging backwards it made its exit through the scalp on a line running horizontally from the external auditory meatus of the corresponding side, 3.15 inches posterior thereto. The wound of exit is a bursting forth of the skin, irregularly quadrilateral in shape, 0.98 inch in its greatest diameter. Near the wound of exit on the inside of the scalp a number of small particles of lead were found, showing that the nucleus of the projectile had parted from the metallic envelope. The track of the wound near the point of exit contains many minute fragments of the occipital bone. Near the wound of entrance the outer margin of the orbit is found to contain three small splinters of bone from 0.07 to 0.31 inch in length, attached to the periosteum; there is a fracture of the external portion of the supra-orbital ridge; periosteum partly torn. There is a fracture of the left parietal bone, entirely covered by periosteum, except near the occiput. The mastoid portion of the temporal bone is depressed 0.39 inch, the apex pointing upward. The base of the skull is extensively fissured. There is also a fracture of the left ramus of the lower jaw. The projectile was lost.

XII. Gunshot injury of the left shoulder joint; bullet marked "O," caliber .45. The wound of entrance is round, 0.45 inch in diameter; there are eleven slight rents in the skin radiating from the circular edge of the wound; the wound of exit is irregular, 0.59 inch in its greatest diameter. The bullet has a number of irregular impressions at the conical end, and it is slightly dented at the cylindrical portion near the base.

XIII. Gunshot injury of the skull; bullet No. 8, caliber .45. The wound of entrance is 2.17 inches above the middle of the right orbit. The explosive effects were so great as the bullet perforated the skull from before backward that the skull cap was literally blown to pieces. It is difficult on account of the great destructive effects to state even approximately the point where the bullet emerged from the skull posteriorly. The bullet is very much deformed at the conical end, flattened in the cylindrical portion near the base, and bent.

Notes on the effects of the projectiles of large and small caliber impressed by the velocity common at 350 yards on the human body, conducted at Frankford Arsenal, Pennsylvania, January 12, 1893.

I. Gunshot injury of the left ankle; bullet No. 2, caliber .30. The wound of entrance is 1.18 inches below the tip end of the internal malleolus; it is round, 0.30 inch in diameter; the wound of exit is at the tip end of the external malleolus; it is star-shaped, 0.39 inch in its greatest diameter. The projectile entered the astragalus at its lower margin and at its articulation with the os calcis. A portion of the bone belonging to the astragalus at this point, 0.59 inch long by 0.39 inch wide, is lying in the wound, attached by periosteum. The posterior portion of the trochlear surface of the os calcis, 0.59 inch long, 0.39 inch wide, is partially detached. The missile passed between the os calcis and the astragalus and emerged through the upper portion of the os calcis next to the outer margin of the articulation. There are several free fragments from the latter bone in the wound of exit. The tip of the external malleolus was crushed by the projectile. The projectile was not deformed.

II. Gunshot injury of the left ankle joint; bullet No. 3, caliber .45. The wound of entrance is round, 3.54 inches in diameter, and torn, the tears radiating from the edges of the wound. The wound of exit is irregularly quadrilateral in shape, 0.79 inch in its greatest diameter. The bullet entered through the internal malleolus and made a grooved fracture of the astragalus; there is complete pulverization of the inner half of the articular surface of the tibia. The missile then passed out, piercing the posterior portion of the external malleolus, the anterior portion remaining attached to the shaft. The projectile was mushroomed.

III. Gunshot injury of the right foot; bullet No. 4, caliber .30. The wound of entrance is 0.35 inch in diameter, 1.18 inches in front of the external malleolus. The wound of exit is located, after several minutes of patient searching, in the sole of the foot, 1.38 inches from the internal malleolus. It is marked by a slit-like opening 0.28 inch in length. The edges of the slit approximate each other thoroughly, hence the difficulty experienced in locating the wound. The projectile entered the os calcis near its articulation with the cuboid and below the head of the astragalus, fracturing the calcaneo-cuboid articulation, splintering the bone in three fragments, near which a small amount of pulverized bone is found. All the bones of the tarsus are intact except the os calcis. The projectile was recovered unaltered in shape.

IV. Gunshot injury of the left tibia and fibula near knee joint; bullet No. 5, caliber .30. The wound of entrance is round, 0.30 inch in diameter; the wound of exit is marked by a longitudinal slit, measuring 0.39 inch in length. The projectile entered the anterior portion of the head of the tibia, 0.39 inch from the joint, in the middle line, passing obliquely toward the outer side, emerged from the posterior surface of the head of the fibula. The orifice of entrance in the bone is equivalent to the diameter of the missile; the orifice of exit is irregular, 0.39 inch in its greatest diameter. There is no comminution of bone. The knee joint was not perforated, but the articular surface adjacent to the outer tuberosity shows a fissure which in the recent state was not apparent. The projectile was lost.

V. Gunshot injury of the lower shaft of the right femur; bullet No. 3, caliber .45. The wound of entrance is 1.57 inches above the outer condyle, round, and 0.45 inch in diameter. The wound of exit is in the upper part of the popliteal space, irregularly quadrilateral in shape, 0.79 inch in its greatest diameter. The bullet entered the lower shaft, 1.57 inches above the margin of the articular surface, 0.39 inch outside the middle line. Nine large splinters are detached, measuring from 0.6 inch to 3.50 inches in length. There are a number of deep vertical fissures in the upper and lower fragments; those in the lower do not invade the joint. The projectile was very much set up.

VI. Gunshot injury of the right hip joint. Bullet No. 6, caliber .30. The wound of entrance is 0.35 inch in diameter, over the femoral vessels, 1.57 inches below Poupart's ligament; the wound of exit is in the middle of the gluteal region of the corresponding side, oval in shape, and exceeds very little the diameter of the projectile. The bullet entered the capsular ligament at its inner margin and traversed the head of the femur, 0.79 inch below the ligamentum teres, producing a grooved fracture. The course of the projectile was horizontal and clear-cut; a fracture, 1.57 inches in length, is noticed extending downwards through the ischium. The compact bone adjacent to the track of the bullet shows fissures not apparent in the fresh state. The missile entered the acetabulum, 1.97 inches from the lower margin in the cotyloid notch. Orifice of entrance corresponds nearly to the diameter of the projectile; the orifice of exit is irregular, 1.97 inches in its two diameters. A fragment of the outer plate of bone, 0.39 inch in length, hangs attached by periosteum. The projectile was not in the least deformed.

VII. Gunshot injury of the left hip joint; bullet No. 7, caliber .30. The wound of entrance perforated the skin on the anterior aspect of the thigh, external to the large vessels, 1.57 inches below Poupart's ligament. The wound of entrance is round, 0.30 inches in diameter; the wound of exit is also round, in the middle of the gluteal region, and it barely exceeds the diameter of the missile. The projectile entered the anterior convexity of the head of the femur, after passing through the capsular ligament; the acetabulum was not involved until after passing through the head of the femur. The projectile traversed the head of the femur in a horizontal direction, 0.39 inch above a horizontal line drawn through the center of the head, and emerged at its posterior surface, 1.28 inches external to the ligamentum teres. A fissure is seen connecting the points of entrance and exit, and extending outwards along the upper margin of the attachment of the capsular ligament; there are smaller fissures, radiating from the orifice of entrance. No splinters are detached. The outer lip of the acetabulum, however, was split, and is held in place only by the capsular ligament. The bullet at the orifice of exit penetrated the acetabulum, 0.59 inch from the outer margin, emerging without detaching any splinters, excepting as noted, and left a clean-cut orifice upon entering and leaving the bone. The orifices of entrance and exit in the globular head of the femur are round and equal to the diameter of the projectile. The orifice of entrance in the pelvis is round, and exceeds but a fractional part the diameter of the projectile; the orifice of exit is 0.59 by 0.39 inch in diameter, with the margins of the orifice slightly elevated. The bullet was not deformed.

VIII. Gunshot injury of the right elbow joint; bullet marked "E," caliber .30. The wound of entrance is on the external aspect of the arm opposite the bend of the elbow, 2.36 inches from the olecranon; it is round, and equal in diameter to that of the projectile; the wound of exit is 0.59 inch below the tip of the olecranon; it is star-shaped, and 0.30 inch in its greatest diameter. The projectile passed through the head of the radius, permitting the outer and posterior aspect of the forearm to receive the wound; the head is split in two portions, one-half of which is finely comminuted, the outer half, together with its portion of the neck and 0.79 inch of the shaft, remains in place without much damage to the periosteum. The pulverized bone, comprising the inner half of the head, lies free in the joint. The projectile entered the ulna 0.20 inch below the joint, near the posterior margin of the lesser sigmoid cavity; the olecranon is completely crushed; fissures extend through the greater sigmoid cavity, and the posterior portion of the articular surface. There are seventeen small splinters detached from the periosteum about the foyer of destruction. The projectile was slightly dented on one side in the cylindrical portion; otherwise it sustained no deformation.

IX. Gunshot injury of the right shoulder joint; bullet No. 6, caliber .30. The wound of entrance is round, 0.30 inch in diameter; it perforated the skin well up on the anterior aspect of the shoulder, 0.39 inch below the acromion; the wound of exit is irregular in shape, 0.59 inch in its greatest diameter, on the posterior aspect of the shoulder, 4.72 inches from the wound of entrance, measuring over the shoulder. The projectile entered the bone in the bicipital groove between the two tuberosities and traversed the head of the humerus, crushing the head in passing out posteriorly. One large splinter, 1.18 inches by 0.98 inch, was carried through the orifice of exit in the bone and found imbedded in the infra-spinatus and teres minor muscle. Four other splinters comprising the globular head of the humerus lay about the seat of fracture; the central portion of the head is pulverized and discolored by lead. The bullet was not recovered.

X. Gunshot injury of the left humerus at the surgical neck; bullet marked "K," caliber .30. The wound of entrance is round, 0.30 inch in diameter, on the anterior aspect of the shoulder, 2.36 inches below the acromion; the wound of exit is marked by a longitudinal slit, 0.39 inch in length, on the posterior aspect of the shoulder in the same vertical plane as the wound of entrance, and 1.18 inches above the latter. The projectile penetrated the surgical neck in the middle line, 0.20 inch external to the bicipital groove, and 2.36 inches from the upper extremity of the bone. The margins of the orifice are clear-cut, oval, 0.35 inch in the lateral and 0.39 inch in the vertical diameter. The orifice of exit is in the same plane, also oval, 0.47 inch in the lateral and 0.59 inch in the vertical diameter. There is but little comminution; one small splinter of bone, 0.39 by 0.16 inch lies at the bottom of the wound, attached to the periosteum. The projectile was flattened at the conical end.

XI. Gunshot injury of the face and base of skull; bullet marked "D," caliber, .30. The wound of entrance is on the prominence of the nose, 0.08 inch to the left of the center, and 0.12 inch from the tip end; it is round, 0.30 inch in diameter; the wound of exit, 0.79 inch below and to the right of the external occipital protuberance, round, 0.39 inch in diameter. The projectile traversed the nasal cavity and ranging posteriorly penetrated the cavity of the cranium in the posterior fossa, 0.39 inch to the right of the median line at the foramen lacerum posterius; it passed through the cerebellum and emerged through the occipital bone. The fracture in the latter is radiating, the splinters are displaced from within outwards. There were five principal splinters, all detached, none of which had been carried through the occipital muscle. The projectile suffered a slight indentation at the conical end.

XII. Gunshot injury left elbow joint; bullet marked "K," caliber .45. The wound of entrance is 0.79 inch below the bend of the elbow, round, 0.43 inch in diameter; the wound of exit is between the external condyle and the olecranon, star-shaped, 0.59 inch in its greatest diameter. After entering the anterior aspect of the joint the missile passed through the external condyle, fracturing the upper end of the ulna to a point 1.57 inch below the coronoid process, grooving the bone above the lesser sigmoid cavity. The bullet is very little set up, and there is a notch in the cylindrical portion near the base.

Notes on the effects of the projectiles of large and small caliber impressed by the velocity common at 500 yards on the human body, conducted at Frankford Arsenal, Pa., March 8, 1893. Some of the notes describing the lesions in the soft parts were unavoidably lost.

I. Gunshot injury left tibia; bullet No. 1, caliber 45. The ball struck the shaft of the left tibia above the middle, passing in an antero-posterior line and shattering the bone into forty fragments, the largest being 3.15 inches in length. A great deal of fine bony sand was found in the track of the wound near the wound of exit. The fissures in the bone tend to radiate from the point of impact. The latter is slightly blackened by lead. The fibula is uninjured. The bone illustrates syphilitic periostitis and hypertrophic ostitis. The projectile was evidently broken into two cylindrical halves; the half corresponding to the base was recovered and it is mushroomed.

II. Gunshot injury upper third, right femur; bullet No. 3, caliber .30. The projectile entered 1.18 inches below the trochanter major of the right femur and emerged below the head of the bone. The trochanter and upper four inches of the femur were shattered. The head of the femur is intact. The fissures are longitudinal. The orifice of entrance is well defined. The orifice of exit is filled with detached fragments held by periosteum. The bullet was slightly flattened at the conical end.

III. Gunshot injury right femur; bullet No. 2, caliber .30. The ball struck the shaft of the right femur at its middle, shattering the bone into a number of fragments. The foyer of destruction is about as extensive as in the preceding fracture. Fifteen free splinters were found. Only the leaden core of the projectile was recovered; it is split at the conical end and bent.

IV. Gunshot injury left tibia; bullet No. 2, caliber .45 The ball struck the inner side of the left tibia above the middle comminuting the bone. Four large splinters, the largest 3 inches in length, and thirty-six smaller fragments were found in the seat of fracture. The large splinters show longitudinal splintering. The bullet was split in two lateral halves; one of these and part of the other were recovered.

V. Gunshot injury of the pelvis; bullet No. 4, caliber .30. The bullet passed transversely through the body, entering the right ilium 3.15 inches below the right iliac crest and 1.57 inches from the acetabulum. The ball made a clean-cut orifice in the outer table of bone 0.39 inch in diameter, but produced a much greater fracture of the inner table, measuring 1.57 inches in diameter. Passing onward the missile struck the left ilium just below the anterior superior spine, comminuting it. The bullet was irregularly dented at the conical end.

VI. Gunshot injury left humerus; bullet No. 3, caliber .45. The ball struck the shaft of the left humerus in the middle line, 2.36 inches from the lower extremity. The orifice of entrance is somewhat larger than the caliber of the bullet; the skin on the posterior portion of the arm is ruptured longitudinally in three distinct places; these rents are, respectively, 1.18, 1.18, and 2 inches in length, and were produced by the passage of the missile and fragments of the shaft of the bone. The lines of fracture radiate from the point at which the projectile struck. The elbow joint was not involved. The bullet was mushroomed and bent; the surface is irregular.

VII. Gunshot injury right elbow; bullet No. 7, caliber .30. The ball entered the front of the right elbow joint in the middle line, fracturing the external and internal condyles obliquely and carrying away the central portion of the articular surface, which is finely comminuted. Two and thirty-six hundredths inches of the ulna, including the olecranon, were comminuted. The fissures were longitudinal. The radius was uninjured. The bullet was slightly set up at the conical end.

VIII. Gunshot injury right knee; bullet No. 1, caliber, .30. The ball entered the right knee in the middle line, producing a grooved fracture of the head of the tibia, destroying the articular cartilage of the tibia, but not touching the femur. The anterior portion of the head of the bone is slightly damaged, one fragment, 2 inches long, was partially detached, embracing the seat of attachment of the tendon of the patella and the bone upon its inner side. The fibula was not injured. The bone illustrates syphilitic periostitis and hypertrophic ostitis. The bullet was not in the least deformed.

IX. Gunshot injury of the left knee-joint; bullet marked "A," caliber .45. The wound of entrance is round, 0.39 inch in diameter, 0.20 inch external to the upper external border of the patella; the wound of exit is in the popliteal space, irregular in shape, 0.59 inch in its greatest diameter. The projectile penetrated the external condyle 0.79 inch from the upper margin of the articular surface, and passed obliquely downwards and inwards, emerging through the articular surface posterior to the internal condyle. There is very slight displacement of splinters anteriorly, and only a small splinter displaced posteriorly; the latter is still held by cartilage at its upper margin. There is an inter-condyloid fracture, but the line of separation extends through the cartilage in its posterior part only. It may be seen through the cartilage anteriorly curving upwards along the trochlear surface towards its upper margin. The patella was not injured. The bullet was slightly dented at the conical end, also in the cylindrical part near the base.

X. Gunshot injury left tibia, upper third; bullet No. 3, caliber .45. The wound of entrance is over the anterior surface of the tibia near the external border, round, 0.39 inch in diameter; the wound of exit is in the thick part of the calf, marked by a longitudinal slit 1.97 inches in length and 0.79 inch in width, with muscle protruding. The projectile struck the tibia 0.79 inch below the articular surface of the knee. The bone is fractured obliquely with a number of large fragments, detached from the periosteum; a countless number of fine fragments and bony sand lie in the foyer of fracture.

XI. Gunshot injury of the pelvis; bullet No. 4, caliber .45. The wound of entrance is round, 0.45 inch in diameter; the wound of exit is irregularly quadrilateral in shape, 1.38 inches in its greatest diameter. The bullet entered the left ilium 0.39 inch anterior to and above the sciatic notch; the orifice of entrance is a trifle larger than the diameter of the missile; there is very little fissuring; the projectile crossed and produced a stellate fracture of the right side of great extent. The bullet is set up and flattened laterally at the conical end. The cylindrical part has lost in caliber and appears to have been drawn toward the base.

Notes on the effects of the projectiles of large and small caliber impressed by the velocity common at 800 yards on the human body, conducted at Frankford Arsenal, Pa., March 8, 1893.

I. Gunshot injury of the right tibia in the middle third; bullet marked "A," caliber .30. The wound of entrance is round, 0.30 inch in diameter; the wound of exit is in the middle of the calf, starlike in shape, 0.39 inch in its greatest diameter. The bullet entered the shaft of the right tibia 6 inches below the knee joint. The destruction in the bone approximates very closely in appearance that of a perforation. Examination immediately after the shot failed to show mobility, and it is believed that the fracture occurred in the subsequent handling of the body. The displacement of the principal fragments is very slight; the periosteum is not broken on the outer side; the periosteum on the inner side of the shaft is only detached about the orifice of entrance. The fibula is intact. The projectile was not deformed.

II. Gunshot injury right shoulder; bullet marked "J," caliber .45. The wound of entrance is oval, 0.59 inch in its greatest diameter; the wound of exit is star-shaped, 0.50 inch in its greatest diameter. The bullet entered the right humerus below the tuberosity and anterior to the bicipital groove and emerged in the posterior and lower portion of the head, crushing the neck and producing an oblique fracture of the upper shaft. The projectile was not deformed.

III. Gunshot injury of the skull; bullet marked "A," caliber .45. The wound of entrance is round, 0.47 inch in diameter; the wound of exit is star-shaped, 1.18 inches in its greatest diameter. The vault of the cranium is fissured into many fragments. The projectile is irregularly flattened at the conical end and slightly flattened in the cylindrical portion near the base.

IV. Gunshot injury of the right ulna near the elbow joint; bullet marked "K," caliber .30. The bullet entered the forearm anteriorly, making a round wound of entry 0.35 inch in diameter. The wound of exit is in the same plane anteriorly, slightly irregular, 0.28 inch in diameter. The projectile entered the ulna 1.57 inches below the coronoid process, comminuting the shaft; one fissure 2.36 inches in length extends down the shaft. The periosteum along the posterior surface of the ulna is not detached. The projectile was lost.

V. Gunshot injury right shoulder joint, bullet No. 5, caliber .30. The wound of entrance is round, of the diameter of the bullet; the wound of exit about the size of the thumb nail. The bullet penetrated the right shoulder, entering the head of the humerus on the inner side of the anatomical neck, producing a clean-cut wound without displacement of the articular surface. The missile then entered the glenoid cavity of the scapula, fracturing it into a large number of fragments and producing in addition a transverse fracture of the body. This fracture extends from the inner margin of the spine 1.18 inches below the position of the glenoid cavity. The coracoid process was also detached and the clavicle fractured through the middle. The projectile was lost.

Notes on the destructive effects of the projectiles of large and small caliber, impressed by the velocity common at 1,200 yards, on the human body, conducted at Frankford Arsenal, Pa., March 9, 1893.

I. Gunshot injury lower third, left femur; bullet marked "J," caliber .45. The wound of entrance is round, 0.45 inch in diameter; the wound of exit is in the upper part of the popliteal space, marked by a slit running obliquely 1.38 inches in length. The missile struck the shaft of the left femur 2.36 inches above the articular cartilage on the inner side of the median line. The bone immediately behind the point of impact covering an irregularly space 1.50 by 2 inches in diameter was carried away and lies finely comminuted in the track of the bullet; only a fraction of the number of the splinters of bone could be recovered. Some fragments of lead were found with the bony sand. The projectile was very slightly flattened in the cylindrical portion near the base; one-third of the conical portion of the bullet was severed laterally and lost; the remaining two-thirds are flattened laterally.

II. Gunshot injury of the head of the right tibia; bullet marked "K," caliber .30. The wound of entrance is 0.30 inch in diameter, and 0.59 inch below the patella; the wound of exit is in the upper part of the calf; it is quadrilateral in shape, 0.30 inch in its largest diameter. The projectile perforated the head of the tibia in the middle line, 0.39 inch below the articular surface. The diameter of the track of the projectile corresponds to the diameter of the missile; the orifice of exit is on the posterior surface, 0.39 inch distant from the articular facet for the fibula. No large fragments were found in the tissues. The fibula and the articular surface of the head of the tibia are uninjured. The projectile was not deformed.

III. Gunshot injury lower end of right femur; bullet marked "D," caliber .30. The wound of entrance is round, 0.30 inch in diameter, 0.79 inch above patella; the wound of exit is in the internal and upper part of the popliteal space, marked by a quadrilateral orifice having a punched-out appearance, 0.79 inch in its greatest diameter. The projectile perforated the anterior face of the bone about its middle, immediately above the upper margin of the articular surface. A small quantity of finely pulverized bone was found in the wound of exit. There was no fissuring, and the articular surface was uninjured. The projectile sustained a slight flattening of its tip at the conical end.

IV. Gunshot injury of the left knee-joint; bullet marked "B," caliber .45. The wound of entrance is round, 0.45 inch in diameter, a little internal to the middle of the patella; the bullet ranged downwards, backwards, and outwards, inflicting a wound of exit in the fleshy part of the calf, which is quadrilateral in shape, 0.79 inch in length. The bullet entered the patella on the inner side of the median line and passed through the outer condyle, emerging 0.79 inch from the point of entrance, splitting the outer tuberosity. A slight outward displacement of the fragments shows a fissure extending upwards to the margin of the articular cartilage. The patella is broken into a number of fragments. Passing downward the bullet entered the left tibia, carrying away a portion of the outer cartilage and grazing the

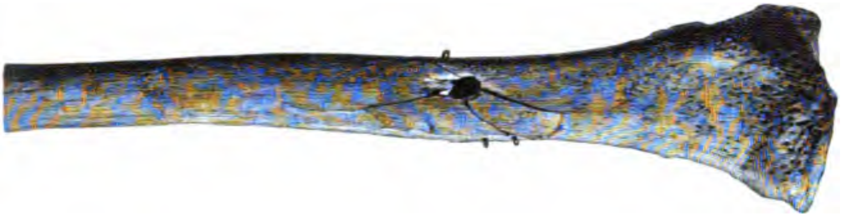

FIG. 1. Gunshot injury of the right tibia, at the junction of the upper and middle thirds, by the .''30 caliber German silver jacketed projectile with the velocity common at 1,200 yards. The projectile penetrated the shaft 6.'' below the knee joint. Examination immediately after the shot was fired revealed no mobility, although upon dissection a distinct fracture was observed. The displacement of the principal fragments is very slight.

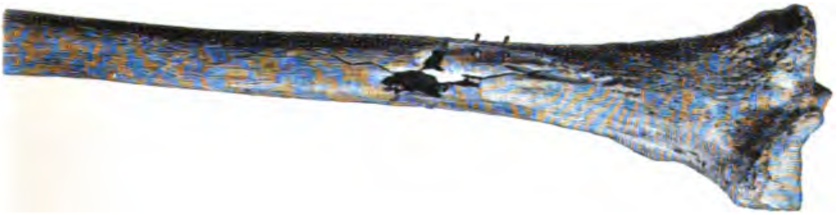

FIG. 2. A posterior view of Fig. 1.

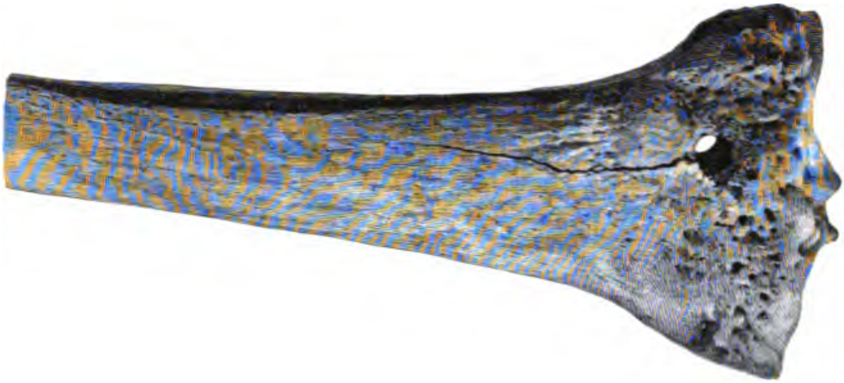

FIG. 1. Gunshot injury of the head of the right tibia by the .″30 caliber German silver jacketed projectile with the velocity common at 1,200 yards. The projectile perforated the head of the tibia in the middle line, .″39 below the articular surface. The diameter of the track of the bullet in the bone corresponds to the diameter of the missile.

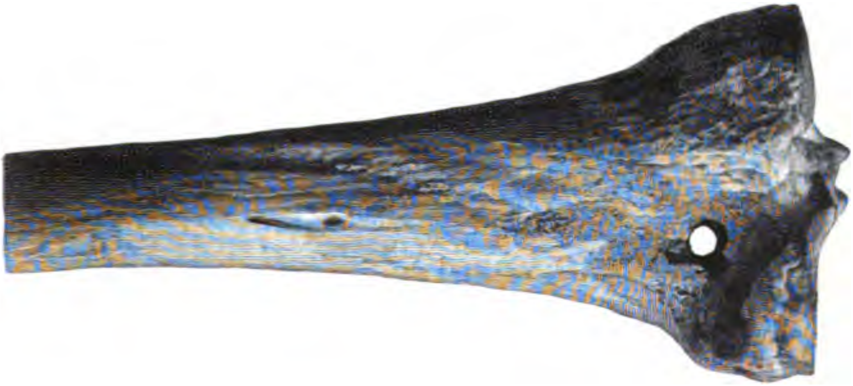

FIG. 2. A posterior view of Fig. 1.

top of the fibula. The bullet was flattened laterally along its cylindrical and conical portions on one side, and flattened at the conical end alone on the opposite side.

V. Gunshot injury of the left tibia and fibula near the ankle joint; bullet marked "G," caliber .45. The wound of entrance is over the ankle in front, round, 0.45 inch in diameter. The wound of exit is just above the external malleolus between the tendo Achillis and the fibula. It is marked by a longitudinal slit, 1.38 inches in length. The bullet entered the tibia 1.18 inches above the ankle joint in the median line; the missile struck the tendon of the tibialis anticus muscle displacing it to the outer side. The inner portion of the shaft and internal malleolus remain intact. The shaft on the outer side is fissured irregularly; a zigzag line extends between the points of entrance and exit. The fibula is fractured at the same level. The bullet is flattened in the cylindrical portion near the base, and flattened laterally at the conical end, the flattened surface at the latter point being very irregular.

VI. Gunshot injury of the right tibia near the ankle; bullet marked "H," caliber .30. The wound of entrance is over the lower part of the leg anteriorly, round, 0.30 inch in diameter. The wound of exit lies in the same plane posteriorly; it presents a punched-out appearance, is triangular in shape, 0.30 inch in its greatest diameter. The bullet perforated the tibia on the anterior aspect in the median line, 2.17 inches above the ankle joint. The orifice of entrance has a punched-out appearance; it is 0.30 inch in the vertical and 0.24 inch in the horizontal direction. There is a fissure 3.75 inches long, extending upwards from the perforation; it is seen through the periosteum, the latter being intact. Posteriorly between the foyer and the wound of exit in the skin many fine splinters of bone are distributed; the fibula is uninjured. The bullet is very little flattened at the conical end.

VII. Gunshot injury of the right knee; bullet No. 1, caliber .45. The wound of entrance is 0.30 inch internal to and above the patella; it is round, 0.45 inch in diameter; the wound of exit is in the middle of the popliteal space, star-shaped, 0.59 inch in its greatest diameter. The bullet entered the bone 1.18 inches above the articular surface. The diameter of the perforation corresponds to the diameter of the missile. The orifice of exit posteriorly admits the index finger and is situated in the popliteal space above the trochlear surface on the inner side of the median line. The bullet was recovered, very little dented at the conical end.

VIII. Gunshot injury of the upper third of the left femur; bullet No. 2, caliber 0.45. The wound of entrance is round, 0.45 inch in diameter; the wound of exit is marked by a slit-like opening running longitudinally 1.18 inches in extent. The projectile entered the anterior aspect of the femur and shattered the bone above its middle. Nine large splinters, from 4 inches to 0.40 inch in length are found in the foyer of fracture, and only partially held by the periosteum. The bullet was set up and dented at one side at the conical end.

IX. Gunshot injury of the upper third of the right femur; bullet No. 1, caliber .30. The wound of entrance is round, 0.30 inch in diameter; the wound of exit is in the fleshy portion of the thigh, quadrilateral in shape, 0.79 inch in its greatest diameter. The bullet entered the bone 5.50 inches below the trochanter major, comminuting the shaft. The largest fragment is 4 by 1.18 inches, and is firmly adherent to the surrounding tissues. The specimen shows an old united fracture of the upper shaft passing obliquely and immediately below the trochanters. The bullet was flattened at the conical end and distorted to one side; the leaden nucleus protrudes from the mantle at the base.

X. Gunshot injury, right tibia, middle of shaft; bullet marked "T," caliber .30. The wound of entrance is round, 0.30 inch in diameter; the wound of exit is marked by a slit in the calf, 0.35 inch in its greatest length. The bullet struck the subcutaneous surface of the tibia at its middle, splintering the bone into several large fragments; the largest one, embracing the crest of the tibia, is 5 inches long. Viewed from the inner side the fissures cross at the point of impact, so as to form an "X." The periosteum is intact and binds the fragments together so that, as far as the dissection would indicate, there is no reason to suppose that the fracture would not unite readily. A large number of fine splinters of bone were found in the muscular tract of the calf, near the seat of fracture. No great laceration of soft parts observed. The fibula was not injured. The projectile was dented at the conical end.

XI. Gunshot injury, right tibia near the ankle joint; bullet marked "C," caliber .30. The wound of entrance is round, 0.30 inch in diameter; the wound of exit is marked by a slit 0.30 inch in length. The bullet perforated the shaft 2 inches above the internal malleolus. On removing the skin the orifice of entrance in the bone presents sharply cut edges, and it corresponds in size to the diameter of the missile. The bullet passed out at the posterior aspect of the bone, the orifice at this point being irregular in shape and a trifle larger than the orifice of entrance. A few splinters of bone were found in the track of the bullet leading from the bone. The projectile was not deformed.

XII. Gunshot injury, left tibia near ankle; bullet marked "Q," caliber .30. The wound of entrance is round, corresponding to the diameter of the bullet; the wound of exit is triangular in shape and 0.30 inch in its greatest diameter. The bullet perforated the tibia 0.79 inch above the ankle joint in the middle line. It passed out in an oblique direction, emerging from the posterior surface near the fibula without injuring it. The perforation is perfect without apparent fissures in the recent state. A few splinters of bone were found in the track of the projectile near the wound of exit. The projectile was lost

XIII. Gunshot injury, head of left tibia; bullet marked "M," caliber .30. The wound of entrance is round, 0.30 inch in diameter; the wound of exit is on the outer border of the popliteal space, irregular, 0.50 inch in diameter. The missile perforated the tibia 3 inches below the knee joint in the subcutaneous surface; the orifice of entrance into the bone is clearly cut, round, being the diameter of the projectile; the orifice which it inflicted upon leaving the bone posteriorly is irregular, 0.35 inch in diameter; there are several spiculæ of bone in the track of the projectile. The fibula is uninjured. The projectile was not deformed.

XIV. Gunshot injury, left tibia, middle of shaft; bullet marked "N," caliber .30. The wound of entrance is round, 0.30 inch in diameter; the wound of exit is triangular in shape, 0.66 inch in length, and located on the outer side of the calf. The absence of motion between the fragments led us to believe, as in a former instance, that we very likely had a perforation, but upon dissection it was found that the bullet ranged from the inner to the outer side and struck the crest of the tibia at the middle, passing wholly in front of the medullary canal, just guttering the crest. Nevertheless there was an oblique fracture running from the point of impact downward and backward, the periosteum still firmly surrounding the two fragments. The track of the missile through the tibialis anticus contains finely pulverized bone. The projectile was bent upon itself in the conical portion and dented.

XV. Gunshot injury, left radius, middle third; bullet marked "S," caliber .30. The wound of entrance is round, 0.30 inch in diameter, and on the anterior aspect of the forearm; the wound of exit is posterior, irregular, 0.35 inch in its greatest diameter. The bullet struck the radius above the middle, comminuting the shaft; the fragments are attached to the periosteum; some small splinters of bone are found in the track of the bullet leading to the wound of exit. The projectile was not deformed.

XVI. Gunshot injury, middle third, right ulna; bullet marked "K," caliber .30. The wound of entrance is round, 0.30 inch in diameter; the wound of exit is also round, a trifle larger than the caliber of the projectile. The bullet entered the anterior aspect of the forearm and passed through the ulna in the middle of the shaft, comminuting the bone into a number of fragments; the median nerve lies uninjured on the radial side of the wound of entrance. The fragments are held together by periosteum and the interosseous membrane. The radius was not injured. The projectile was not deformed.

Notes on the effects of the projectiles of large and small caliber impressed by the velocity common at 1,500 yards on the human body, conducted at Frankford Arsenal, Pa., March 9, 1893.

I. Gunshot injury of the lower third of the left humerus; bullet No. 3, caliber .45. The wound of entrance is round, 0.59 inch in diameter, 1.57 inches above the bend of the elbow; the wound of exit is on the external aspect of the forearm, marked by a longitudinal slit, 1.18 inches in length. The bullet struck the humerus 1.18 inches above the articular cartilage, in the middle line; the bone was shattered into a number of large fragments, ranging from 0.50 inch to 2.50 inches in length. The bone near the point of impact was discolored by lead. Small particles of lead are seen on the outer side. The bullet separated in two parts longitudinally, the greater part only having been recovered.

II. Gunshot injury of the lower shaft of the right humerus, furrowing; bullet marked "D," caliber 0.30. The wound of entrance is round, 0.30 inch in diameter, 0.79 inch above the bend of the elbow; the wound of exit is slit like, 0.35 inch in its longest diameter and 0.59 inch above the external condyle. The bullet struck the shaft 2.36 inches above the external condyle on the outer side of the median line and glanced outward, furrowing the bone. The projectile was bent to one side, and laterally flattened at the conical end; the cylindrical part of the jacket was twisted upon itself and the leaden nucleus slightly protrudes at the base.

III. Gunshot injury, upper third, left femur; bullet No. 7, calibre .45. The wound of entrance is round, 0.45 inch in diameter; ball lodged. On making an incision exposing the seat of fracture, part of the bullet, including one-third of the cylindrical portion and the base, is seen lying against the lower end of the upper fragment and immediately in contact with the bone. The base of the bullet lies against the bone and the flattened cylindrical part points toward the wound of entrance. A second portion of the bullet was recovered lying on the anterior portion of the neck f the femur just below the capsular ligament, where it had slid a distance of 5

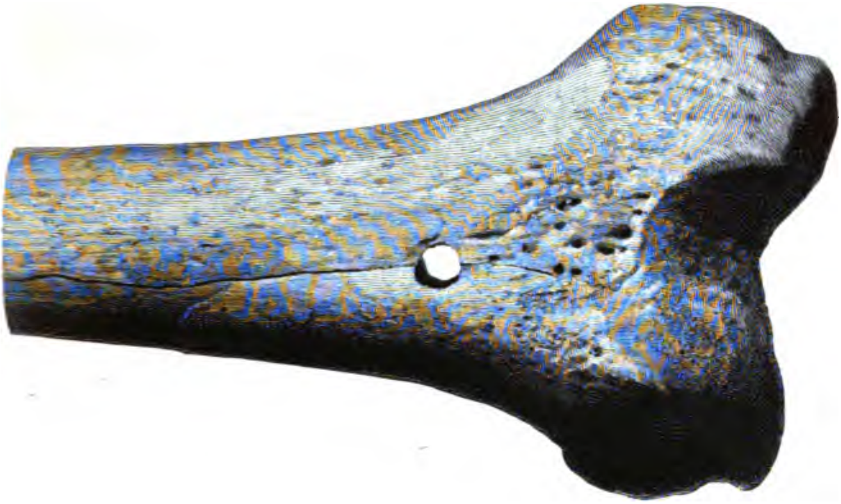

FIG. 1. Gunshot injury of the lower third, right femur, by the ."30 caliber German silver jacketed projectile with the velocity common at 1,200 yards. The projectile perforated the anterior face of the bone about its middle, immediately above the upper margin of the articular surface, making a clean-cut perforation. The fissure occurred in drying, it was not present in the recent state.

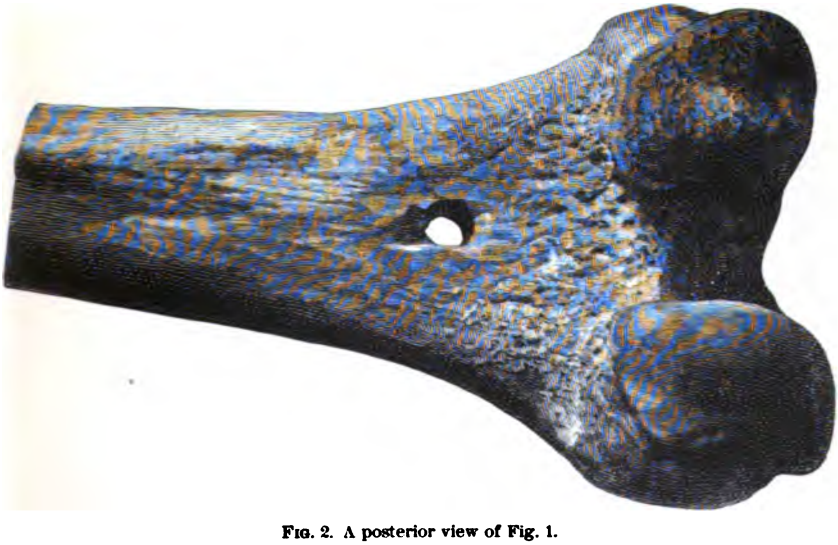

FIG. 2. A posterior view of Fig. 1.

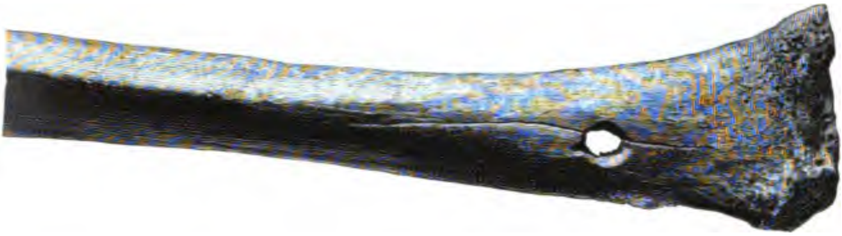

FIG. 1. Gunshot injury, right tibia, near the ankle, by the .″30 caliber German silver jacketed projectile with the velocity common at 1,200 yards. The bullet perforated the tibia on the anterior aspect in the middle line 2.″17 above the ankle joint. The orifice of entrance has a punched-out appearance equal in diameter to that of the projectile. The fissure occurred in drying, it was not present in the recent state.

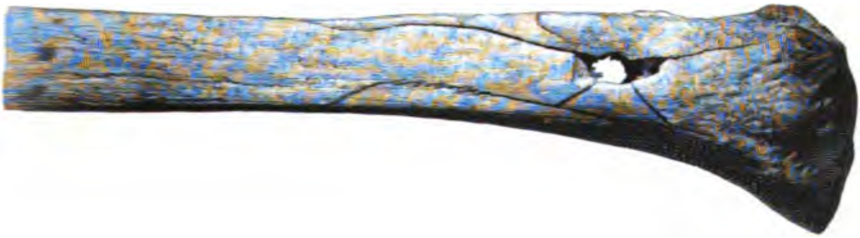

FIG. 2. A posterior view of Fig. 1. Fissures are exaggerated by drying.

PLATE E.

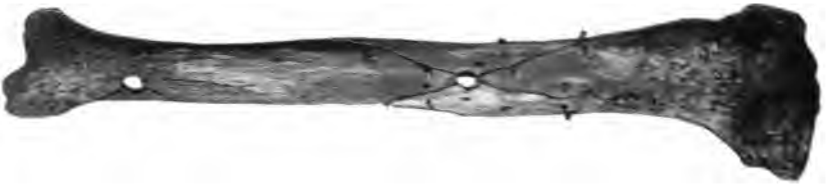

FIG. 1. The specimen shows two perforations of the right tibia by the .″30 caliber German silver jacketed projectile with the velocity usually possessed at 1,200 yards. The perforation in the middle of the shaft shows two fissures crossing each other in the form of an "X." There is a complete fracture. The lower perforation is attended with less fissuring. There is no solution of continuity.

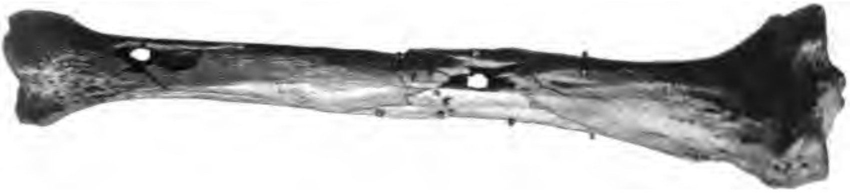

FIG. 2. A posterior view of Fig. 1.

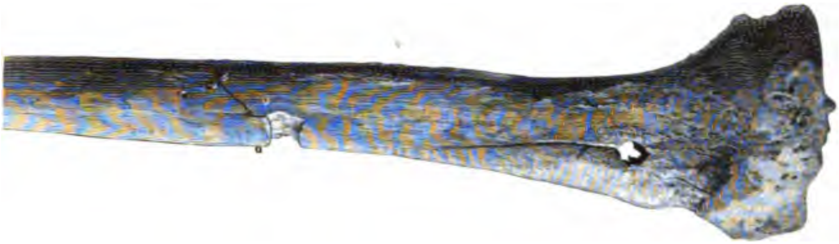

FIG. 1. This specimen shows a complete perforation in the upper part of the shaft of the left tibia by the .″30 caliber German silver jacketed projectile with the velocity common at 1,200 yards. There is also an injury in the middle of the shaft by a .″30 caliber projectile at the same range. The bullet struck the crest of the tibia, passing wholly in front of the medullary canal, guttering the crest. There is a complete fracture. There is no record of the injury near the ankle.

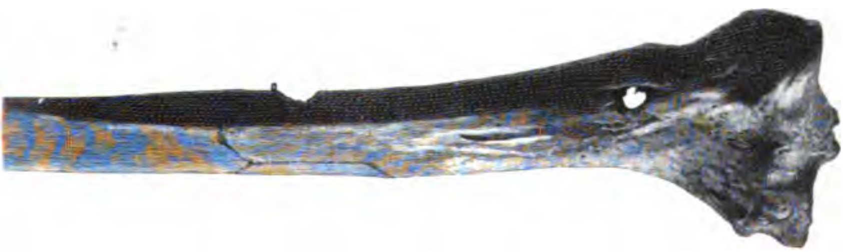

FIG. 2. A posterior view of Fig. 1.

inches. The femur is badly shattered into a number of large splinters, some measuring 4.33 inches long, and among them are found many small fragments of lead.

IV. Gunshot injury, right femur, upper third; bullet No. 8, caliber .30. The wound of entrance is round, 0.30 inch in diameter; the wound of exit is marked by a transverse slit, 0.35 inch in its greatest length. The missile struck the anterior portion of the shaft 3.54 inches below the anterior superior spinous process of the ilium causing a complete fracture; the periosteum binds the fragments together. There is a fissure 5.20 inches in length extending in a waving line downwards and outwards below the middle of the shaft. The projectile emerged from the bone just below the trochanter minor. Several small fragments on the posterior face of the bone hang by shreds of periosteum, and small spiculæ are found free near the wound of exit in the skin. The projectile was dented at the conical end.

V. Gunshot injury, right knee joint; bullet No. 7, caliber .30. The wound of entrance is round, 0.30 inch in diameter; the wound of exit is in the popliteal space, slit-like, 0.30 inch in length. The bullet entered the right femur 0.59 inch above the articular surface and 0.59 inch external to the median line, causing a clear-cut perforation without fissures above or below the point of impact. The bullet passed out of the bone at the outer margin of the popliteal space leaving a few fine spiculæ of bone at the orifice of exit and a small quantity of bony sand at the wound of exit in the skin. The projectile was not deformed.

VI. Gunshot injury left femur, middle third; bullet No. 6, caliber .30. The wound of entrance is round, having the same diameter as the projectile; the wound of exit is slit-like, 0.36 inch in length. Examination soon after the injury and before the body had been moved, for the next shot failed to show the presence of motion between the fragments, and for this reason the following remarks were entered on the memorandum to the anatomist: "This injury very likely presents a perforation in the middle of the shaft, and the limb should be handled very carefully." Upon dissection the following condition was found: The bullet struck the shaft of the femur above the middle, producing an extremely oblique fracture and detaching one large fragment belonging to the outer side of the bone, 4 inches in length and two-thirds of an inch in width. There is a fissure extending from a point two-thirds of an inch below the trochanter minor downwards to the point of impact of the missile and extending downwards into the outer side in a waving line to a point 4 inches below the point of impact. The periosteum was not detached. A very small quantity of bone is found in the track of the bullet from the bone to the wound of exit. It is more than likely that the immediate effects of the projectile simulated a perforation with very fine fissures that served to complete the fracture as stated when the body was handled by the man who carried it a distance of 10 miles in a wagon. The projectile was flattened at the conical end.

VII. Gunshot injury left humerus, junction of upper and middle thirds; bullet No. 0, caliber .30. The wound of entrance is round, 0.30 inch in diameter; the wound of exit is marked by a longitudinal slit, 0.33 inch in length. The bullet struck the shaft a little above the middle third, causing a long oblique fracture extending from without inwards 4 inches in length; there is a slight comminution of the lower fragment at the point of impact; the periosteum was not detached. The projectile was not recovered.

VIII. Gunshot injury right humerus, near surgical neck; bullet No. 5, caliber .30. The wound of entrance is round, having the diameter of the projectile, over the surgical neck in front; the wound of exit is on the same plane posteriorly, marked by a slit 4 lines in length. The bullet struck the surgical neck of the humerus in the middle line comminuting the bone; the periosteum at the point of entrance into the bone is untorn; upon leaving the bone the projectile caused a radiating fracture; several fragments are held by periosteum and very little displaced; a few fine spiculæ are found in the track of the bullet leading to the wound of exit. The projectile was lost.

Notes on the effects of the projectiles of large and small caliber, impressed by the velocity common at 2,000 yards, on the human body, conducted at Frankford Arsenal, Pa., March 16, 1893.

I. Gunshot injury left tibia, middle third; bullet No. 1, caliber .45. The wound of entrance is oval in shape, 0.51 inch in its greatest diameter. The projectile remained lodged under the skin of the calf. The bullet entered the subcutaneous part of the shaft, 5.50 inches below the knee joint, causing extensive comminution of the bone at the foyer of fracture, including 2 inches of the shaft. Some of the fragments are free whilst others remain attached to the periosteum. The bullet was found under the skin of the calf; it was cleft longitudinally through the conical part, one-half of the cone having become detached from the cylindrical part. The detached fragment was found embedded in the tibialis anticus muscle.

II. Gunshot injury of the right tibia at junction of middle and lower thirds: bullet No. 4, caliber .30. The projectile entered side-on, inflicting a wound of entrance which runs obliquely 0.98 inch long and 0.39 inch wide. The bullet lies under the skin posteriorly in the lower part of the calf. The bullet guttered the inner side of the tibia 5.12 inches above the internal malleolus. On removing the skin several spiculæ of bone are seen in the wound; the outer border and crest of the tibia are uninjured; the posterior surface of the bone is splintered over a distance of 3.15 inches in lines which radiate from the point of emergence. The periosteum is not detached, excepting in the line of the passage of the projectile and over an area adjacent to the posterior margin of the groove, between 0.20 and 0.40 inch in diameter. The fibula was not injured. The bullet was embedded in the muscle of the calf with its point resting against the skin and its base presenting in the track through the muscle adjacent to the bone, a distance of 0.79 inch. The projectile is slightly flattened at the conical end, otherwise it is unaltered.

III. Gunshot injury left knee joint; bullet No. 2, caliber .45. The wound of entrance is round, 0.45 inch in diameter, above and internal to the patella; the wound of exit is in the lower part of the popliteal space, oval, and 0.59 inch in the greatest diameter. The bullet perforated the tibia 1.18 inches below the articular surface. The orifice of entrance in the bone is sharply defined, irregular in shape, 0.59 inch in the vertical and 0.39 inch in the horizontal line; the orifice of exit is also irregular, 0.59 inch in its greatest diameter. There is a fracture of the shaft marked by a fissure, which runs downwards and backwards; the compact tissue of the upper and posterior surface of the bone is broken by radiating fissures into six fragments. The muscular track from the bone to the wound of exit contains some fine spiculæ of bone. The projectile was not recovered.

IV. Gunshot injury right knee joint; bullet No. 9, caliber .30. The wound of entrance is round, 0.30 inch in diameter and 0.39 inch from the internal border of the patella at its middle; the wound of exit is in the upper part of the popliteal space marked by an oblique slit-like opening 0.39 inch in length. The projectile entered the bone 0.79 inch above the articular surface, making a perforation of the femur: the missile passed out in the median line in the popliteal space, perforating the popliteal vein, leaving the artery uninjured. The wound is full of venous blood clots. A few very fine spiculæ of bone were found in the track of the projectile leading to the wound of exit. There is a fissure 4.72 inches in length, which extends from the orifice of entrance in the direction of the shaft, and a number of smaller radiating fissures are observed to start from the orifice of exit. The projectile was recovered from the sawdust very much deformed. The metallic jacket was ruptured at the conical end, having a slit running along the side of the cylindrical portion at the end of which a transverse slit occurs, which includes one-half of the cylindrical part of the envelope; the leaden nucleus has parted entirely from the jacket: it is flattened at the conical end, bent upon itself in the cylindrical portion, and scooped out on one side.

V. Gunshot injury left femur, upper third; bullet No. 3, caliber .45. The wound of entrance is round, 0.45 inch in diameter; the wound of exit is on the outer and posterior aspect of the thigh, marked by a longitudinal slit, 0.59 inch in length. The projectile made a glancing shot, striking the outer aspect of the shaft of the femur 4.72 inches below the trochanter major, producing an oblique fracture of the shaft from above downwards and inwards; the fragments are considerably displaced, the lower shaft lying to the outer side; the periosteum is detached about the point of impact, but the fragments of bone are not loosened to any very great extent; there is a fissure extending from the trochanter minor downwards a distance of 6 inches. Particles of lead were found in the foyer of fracture. The bullet was seemingly split in two lateral halves nearly equal in weight; the greater half only was recovered.

VI. Gunshot injury of the right femur, upper third; bullet No. 0, caliber .30. The wound of entrance is round, 0.30 inch in diameter; the wound of exit is triangular in shape, 0.39 inch in its greatest length. The bullet struck the shaft of the femur in the middle line anteriorly, 7 inches below the anterior superior spine of the ilium, comminuting the bone into a number of fragments, which are held by periosteum. The bullet was flattened at the conical end; otherwise it is unaltered.

VII. Gunshot injury left humerus, surgical neck; bullet No. 4, caliber .45. The wound of entrance is round, 0.45 inch in its greatest diameter; the wound of exit is crescentic in shape with a flap of skin filling the concavity of the crescent; it is 0.55 inch in its greatest diameter. The projectile grooved the outer side of the surgical neck of the humerus 0.39 inch external to the bicipital groove. The periosteum is not displaced except between the point of impact and the anatomical neck. The articular surface is uninjured. The bone is discolored by lead, and a small fragment is seen lying against the compact tissue of the bone. Another small fragment of lead, 0.39 inch by 0.08 inch, was found in the track of the bullet near the

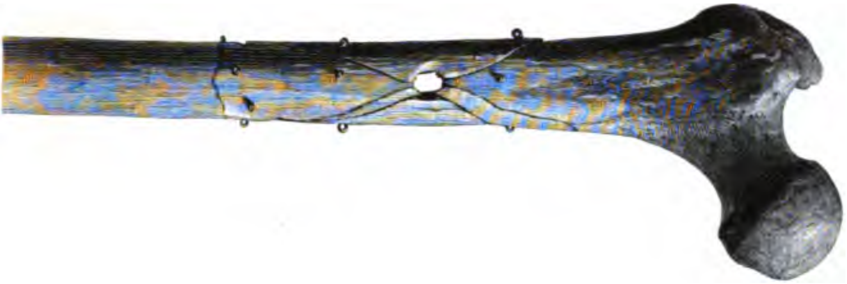

FIG. 1. Gunshot injury of the right femur at junction of middle and upper thirds by the ."30 caliber German silver jacketed projectile with the velocity common at 2,000 yards. There is a well-marked perforation with extensive fissuring.

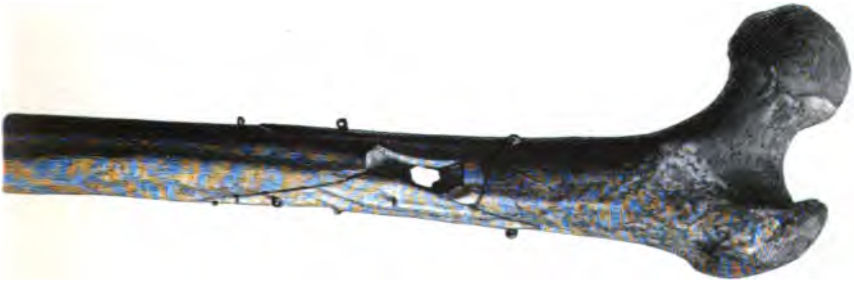

FIG. 2. A posterior view of Fig. 1.

PLATE H.

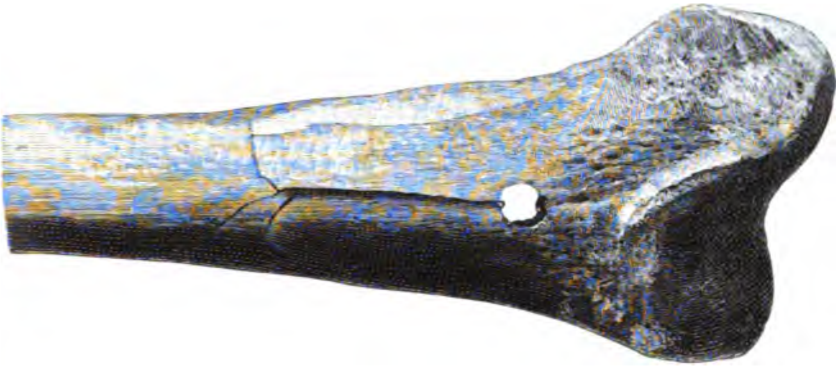

FIG. 1. Gunshot injury, lower third, right femur, by the .″30 caliber German silver jacketed projectile possessed with the velocity usual at 2,000 yards. The projectile entered the bone .″79 above the articular surface making a perforation with long fissures.

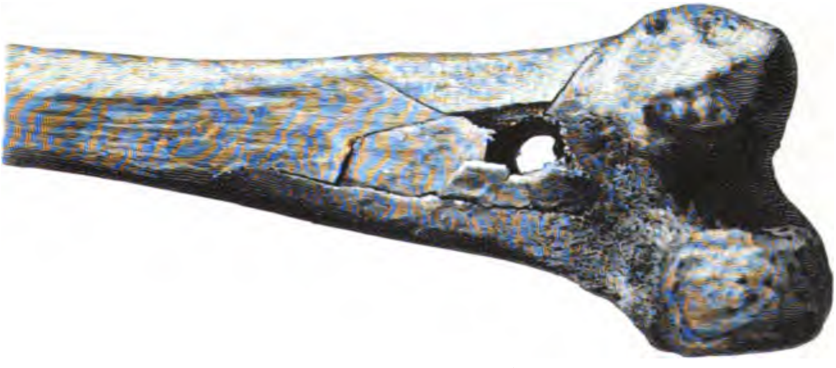

FIG. 2. A posterior view of Fig. 1.

wound of exit. The bullet was slightly set up and partially split at the conical end and grooved on one side in the cylindrical portion.

VIII. Gunshot injury of the surgical neck of the right humerus; bullet marked "K", caliber .30: The wound of entrance is oval in shape, 0.30 inch in its greatest diameter; the wound of exit is marked by a longitudinal tear, 0.79 inch in length. The bullet entered the bicipital groove 2 inches below the articular surface and emerged on the inner aspect of the shaft. The wound of exit is filled with fine spiculæ of bone. The seat of fracture shows ten fragments of bone; there is a fissure 2.75 inches long, which runs in the shaft downward and outward; the periosteum over this oblique fracture is not detached. The bullet was recovered slightly flattened at the conical end.

OBSERVATIONS UPON THE FOREGOING RESULTS.

Soft parts.—The wound of entrance corresponds in diameter as a rule to the diameter of the projectile. In the middle and remote ranges the entrance wound measured less at times than the diameter of the projectile, but the difference was only apparent since the wound invariably admitted a projectile of like caliber to the one that inflicted it. In the short ranges it was often noted that skin overlying bone and resistant aponeuroses was apt to show a wound of entrance actually exceeding in diameter that of the missile. The edges of the wound of entrance were at times clear-cut, but more often they were rolled in, and often blackened for a distance of a line about the circumference. The latter circumstance gave rise to the notion formerly that the discoloration was due to burning, but from experiments conducted by *Beck*, also by myself to be cited later, this fallacy has been forever set at rest.

The wound of exit of the .30-caliber rifle was generally larger than the wound of entrance, and beyond the zone of explosive effects especially it was generally round, marked at times by a mere slit; again it was star-shaped, T-shaped, semicircular, etc.; the edges were generally turned out. When a wound of exit exceeded in diameter that of the projectile to any extent the circumstance was generally regarded as *indicative* of bone lesion.

Effects upon diaphyses of long bones.—Up to 350 yards the destructive effects of the wo projectiles are alike severe. Unless guided by the wound of entrance or other ircumstances it is difficult within this range to determine by the appearance of the injury alone which of the projectiles may have caused it. After this range the detructive effects of the smaller projectile become less than those of the larger misile. The fissuring is less, the spiculæ of bone are larger, and they are more apt to e attached to the periosteum. These differences are especially noticeable from the 0 to the 1,500-yard ranges. At 2,000 yards the small bullet again shows rather extensive comminution. This fact has been noted by all observers, and it has been ariously explained, though not in a very satisfactory manner. It has been said that he projectile has lost so much of its velocity of translation when it reaches this part f its course that it is apt to lodge, and that the velocity of rotation causes such a sturbance when it is about to engage that comminution is the result. The angle impact, which is rarely vertical at this range, has been brought forth as a possible use. Certain it is that a number of the projectiles were observed at this range by to impinge side-on at the moment of impact. Whether this circumstance is more t to occur with reduced charges than we would expect to find in the natural contion is a mooted question.

Delorme and Chavasse state that the Lebel rifle bullet appeared to produce more omminution beyond 1200 m. than the projectile of the Gras rifle. Our experience Frankford Arsenal does not accord with theirs in this particular, and for very od reason. They experimented with the projectile of the Lebel, which for all actical purposes corresponds to the projectile of our .30 caliber experimental ringfield rifle, and they compared its effects with that of the Gras. The latter is eir 11 m.m. gun, which in caliber is a trifle less (0.433) than our .45 caliber ringfield rifle. This alone would make no great difference, but when we compare e weight of their large caliber with ours, we find that our service bullet is 125 ains heavier. This in itself is sufficient to account for the greater destructive ects of our larger caliber projectile over theirs, hence the difference in the results erred to.

Effects upon joints.—Before engaging upon this part of the subject I wish to prefe my remarks by stating that the humane wound of the small bore gun is esially observed in the joints and soft parts. Owing to the reduction in caliber wounds in the latter partake more of the nature of subcutaneous wounds, and perience shows that they heal very kindly under appropriate treatment.

t is not necessary in this instance to dwell especially upon the destructive effects he larger leaden projectile upon joints. Suffice it to say that the greater frontage, ich it naturally possesses, is made greater still by deformation, and that these facts with velocity sufficient to penetrate a joint serve to convert the .45 caliber projectile into a very destructive missile.

The experiments conducted at Frankford Arsenal show in a striking manner the difference in destructive effects by the two bullets upon the spongy ends of bone. In order to appreciate this difference it is necessary to go beyond the zone of explosive effects for the .30 caliber projectile, namely 350 yards. Even within the latter range perforation with slight fissuring will at times be noticed. From the latter range to the 1,500-yard range perforations and gutterings with but little fissuring are almost invariably seen. Between 1,500 and 2,000 yards, the specimens show perforations still, but there is a tendency to fissuring again, as noted in the shorter ranges.*

Deformation of projectiles.—The deformations of projectiles which accompany the majority of the specimens represent nearly every form of alteration known. Those of the leaden projectiles are sufficiently familiar and require no comment. The deformation of the jacketed projectile is most common at the conical end, and consists usually in a slight dent or flattening; partial separation of the metallic mantle from the leaden nucleus is occasionally seen; complete separation between the jacket and nucleus is a very rare occurrence. It occurs principally with high velocities at close range, when the projectile encounters resistant bone. Separation of the envelope and nucleus was noticed very seldom in the middle and remote ranges.

THE HEAT IMPARTED TO PROJECTILES.

The heat imparted to a projectile by the ignition of the powder, the resistance in the barrel, etc., has been very much exaggerated. Some have gone so far as to claim that the small jacketed bullets are rendered aseptic thereby. In a series of experiments conducted at the pathological laboratory of the Johns Hopkins University and Hospital, also at Frankford Arsenal during the past few months, I was able to show that this claim is false. In order to arrive at some definite conclusion in the matter I undertook a series of experiments † calculated to answer the two following questions:

1. Are projectiles from portable hand weapons sterilized by the act of firing?
2. Can a septic bullet infect a gunshot wound?

As a preliminary to the work of noting the effects of firing bullets that had been previously contaminated it was considered proper to ascertain the condition, bacteriologically speaking, of bullets in their original packages. After a number of observations it was found that 53 per cent of all cartridges in their original packages were absolutely free from germs. This is to be ascribed to the cleanly methods which are necessary in their manufacture.

The literature of gunshot wounds shows that the majority of surgeons of the past and present times believe that the act of firing destroys any infection that might have been accidently or otherwise placed upon the projectile.

In order to ascertain the facts in the matter I fired projectiles after they had been sterilized by heat from revolvers that had been similarly sterilized. The projectiles were recovered from sterilized cotton and dropped into gelatin tubes. The latter revealed no growth.

Projectiles covered with dust were then fired from sterilized revolvers into sterilized cotton. As each projectile was recovered it was dropped into a gelatin tube. Colonies appeared in every instance.

In a series of experiments with the .22 and .38 caliber revolvers, the .45 caliber Springfield rifle, as well as the .30 caliber experimental Springfield rifle, whose ballistic qualities correspond to the Mannlicher, improved Mauser, Lebel, etc., the projectiles were in all instances infected with the germs of anthrax and fired into sterilized materials and into animals.

The tables of results show that anthrax bacilli or spores are seldom, if ever, destroyed by the act of firing.

Bullets infected with the streptococcus of erysipelas, with some of the same culture of tetanus mentioned below, and with the bacillus pyogenes soli of Bolton were fired through the ears of rabbits with a .45 calibre Colt's revolver. The erysipelas coccus was communicated to one animal, and the bacillus pyogenes soli was recovered from the wound of another. Tetanus was not communicated.

A bullet infected with a culture of the bacillus of tetanus was fired into a horse with the modified Springfield rifle with negative results; rabbits inoculated with some of the same culture died promptly. At the suggestion of Prof. Meade Bolton of the Johns Hopkins Hospital a bag of tetanus earth was placed against the hip of another horse and the projectile of the .30 caliber experimental Springfield rifle was fired through the earth into the fleshy part of the ham without result.

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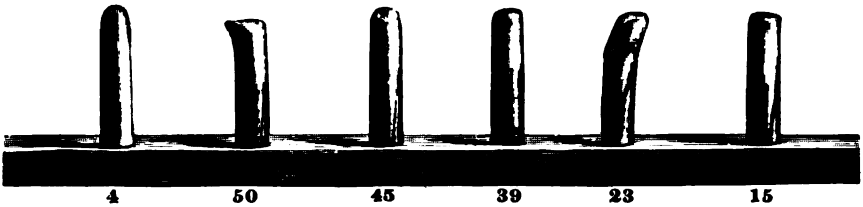
* See Figs. 1 and 2, Pl. 4.

† (See New York Med. Journal, Vol. LVI, No. 17, October 22, 1892, p. 458.)

PLATE K.



Specimens showing the more common deformations of the ."30 caliber German silver jacketed projectile:

No. 4. This is a normal ."30 caliber German silver jacketed projectile which was never fired.

No. 50. A ."30 caliber German silver jacketed projectile after inflicting a comminuted fracture of the tibia and fibula with the velocity common at 150 yards.

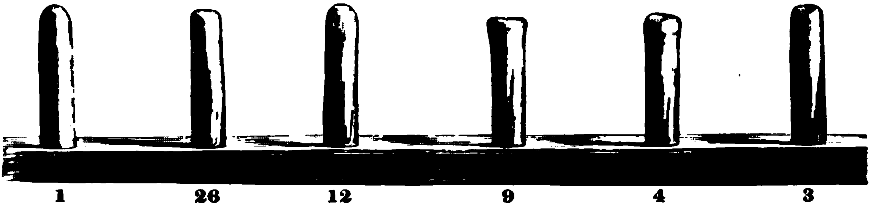
No. 45. A ."30 caliber German silver jacketed projectile which caused perforation of the astragalus with the velocity usual at 350 yards.

No. 39. A ."30 caliber German silver mantle projectile which inflicted a perforation of the surgical neck of the humerus with little comminution with the velocity common at 350 yards.

No. 23. A ."30 caliber German silver jacketed projectile after inflicting a perforation with slight fissuring of the middle of the shaft of the tibia, when propelled with the velocity usual at 1,200 yards.

No. 15. A ."30 caliber German silver jacketed projectile after inflicting a complete fracture with extensive fissures of the middle of the shaft of the femur, while possessed with the velocity usual at 1,500 yards.

PLATE L.



Specimens showing the more common deformations of the ."30 caliber German silver jacketed projectile:

No. 1. A normal ."30 caliber German silver jacketed projectile which was never fired.

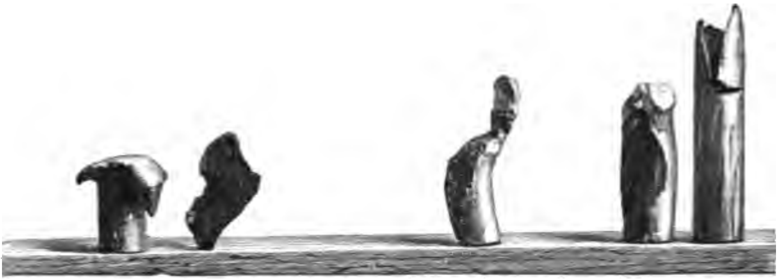
No. 26. A ."30 caliber German silver jacketed projectile showing the deformation sustained upon fracturing the middle of the shaft of the tibia, when possessed with the velocity usual at 1,200 yards.

No. 12. A ."30 caliber German silver jacketed projectile showing the deformation sustained upon causing a fracture with slight comminution of the lower half of the humerus, while possessed with the velocity common at 1,500 yards.

No. 9. A ."30 caliber German silver jacketed projectile showing deformation after fracture of the middle half of the femur, when possessed with the velocity common at 1,500 yards.

No. 4. A ."30 caliber German silver jacketed projectile showing the deformation upon colliding with the upper third of the femur while propelled with the velocity common at 2,000 yards.

No. 3. A ."30 caliber German silver jacketed projectile showing the deformation sustained upon fracturing the middle third of the tibia when propelled by the velocity usual at 2,000 yards.



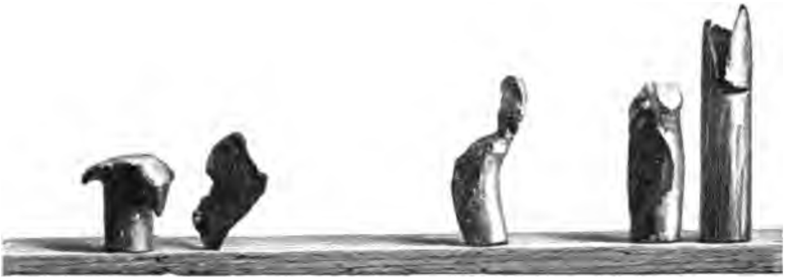
Specimens showing unusual deformotions of the .″30 caliber German silver jacketed projectiles:

No. 4. A .″30 caliber German silver projectile showing separation of the nucleus from the envelope; the nucleus is badly mushroomed, and only a fragment of the envelope was recovered. The projectile was fired into the arm at 17 yards with the full charge of powder. The humerus was pulverized 3 inches in extent, and the soft parts showed extensive explosive effects.

No. 10. A .″30 caliber German silver jacketed projectile showing deformation after causing extensive comminution of the femur, when propelled with the velocity common at 500 yards. The nucleus alone was recovered.

No. 1. A .″30 caliber German silver jacketed projectile showing the deformation sustained after perforating the lower shaft of the femur, when possessed with the velocity usual at 2,000 yards. The nucleus has escaped from the envelope through a rent In the conical end. The concavity in the nucleus was probably sustained by colliding with another projectile in the sawdust.

PLATE M.



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No. 1. A .''30 caliber German silver jacketed projectile showing the deformation sustained after perforating the lower shaft of the femur, when possessed with the velocity usual at 2,000 yards. The nucleus has escaped from the envelope through a rent in the conical end. The concavity in the nucleus was probably sustained by colliding with another projectile in the sawdust.

The following conclusions may be formulated from the foregoing:

1. The majority of cartridges in original packages are sterile and free from septic germs.
2. The sterile condition of cartridges is due to the thorough disinfection and absolute cleanliness observed in the process of manufacture.
3. The majority of gunshot wounds are aseptic because the vast majority of the projectiles inflicting them are either sterile or free from septic germs.
4. Anthrax spores or bacilli, when applied to the projectile of a portable hand weapon are seldom, if ever, entirely destroyed by the act of firing.
5. When a gunshot wound is inflicted upon a susceptible animal by a projectile infected with anthrax bacilli the animal becomes infected with anthrax, and dies in a vast majority of instances from said infection.
6. The streptococcus of erysipelas and the bacillus pyogenes soli, when placed upon the projectile of the .45 caliber Colt's revolver, are not always at least destroyed by the act of firing, and they are liable to cause infection.
7. Projectiles from portable hand weapons are not sterilized by the act of firing.
8. A septic bullet can infect a gunshot wound.

It is evident from these results that the act of firing does not impart enough heat o the projectile to destroy organisms placed upon its surface, and that there never s sufficient heat in the projectile to cauterize the track which it makes in the tissues. Yet he who may have occasion to inquire into the literature of this subject will be surprised to find the number of eminent surgeons who until very recently at east were firm believers in the notion that gunshot wounds owed the discoloration about the wound of entrance and other appearances in the wound to the heat of the rojectiles.

In these days of precise work in scientific details the amount of heat imparted to he projectile can be pretty accurately ascertained, and aside from my own experiments cited already it may not be amiss to quote the following:

"Dr. B. von Beck, medical director fourteenth army corps of the German army, o whom we owe so much of our knowledge of the character of wounds inflicted by he rifles of small caliber, conducted some experiments to determine the amount of eat imparted to the hard bullet of small caliber having a mantle of steel or copper. He fired into a target made of boards and thin sheets of iron arranged alternately bout an inch apart. He recovered the projectiles as soon as possible after firing, ever allowing more than ten seconds to intervene between the firing and the ecovery of the missiles. The latter were dropped into 300 grams of mercury in a paper box 7 centimeters high and 3 centimeters wide. By means of a cork xed on the bulb of a thermometer he held the projectile under the mercury and oted the rise of temperature of the metal. By this method he conducted many xperiments, and he says that the missiles were invariably handled by the fingers, nd that they never possessed heat enough to burn the skin. After making allownce for specific heat and the conductivity of the different metals entering into the composition of the projectiles used, he found that even when the projectiles encountered resistance from three to four times greater than that offered by the human ody the results were as follows:

	° C.
emperature of the leaden bullet of .45 caliber when recovered	69
emperature of the leaden bullet of .30 caliber, covered with steel, when recovered	78
emperature of the leaden bullet of .30 caliber, covered with copper, when recovered	110

"He states that these experiments overthrow the theory that certain lesions in ounds can be attributed in any way to the heat imparted by the bullet. He elieves that the periphery of the projectile is alone heated, because the act of heatg is accomplished so instantaneously that the heat can not be conducted lower."

GUNSHOT INJURIES INFLICTED BY PROJECTILES OF HARD EXTERIOR.

As may be observed, the foregoing report deals principally with the comparative fference in destructive effects between the .30 caliber German-silver jacketed bullet nd our .45 caliber leaden projectile. It may be appropriate here to consider the ffects of the different projectiles of hard exterior as contrasted with the effects of he old leaden bullets of large caliber belonging, for instance, to the older Mauser nd the Gras of the Germans and French.

With the introduction of the modern rifle of small caliber in 1886 the subject of unshot wounds received renewed interest for the military surgeon at least. The udy of the advantages to be obtained by a reduction in caliber and the use of proectiles of hard exterior dates from the publication of a pamphlet by Prof. Heb r, a German artillery scientist, in 1882. Since that time foreign governments or after the other have adopted the small-bore weapon, and these are all of the repeating pattern with the exception of the weapons adopted by Russia and Italy, these countries having adopted single loaders.

We are indebted to military surgeons from nearly all the governments which have adopted the new armament for valuable experiments touching upon the effects of the projectiles of the different weapons, both upon cadavers and dead and living horses.

In Germany Busch and Reger were among the first to call attention to the difference in destructive effects between the old leaden bullets of large caliber and the new bullets of small caliber with hard envelopes. Later, Profs. Morosow, Lieber, and Pawlow, of Russia, produced valuable contributions. Delorme and Chavasse, Chauvel and Nimier, especially, in France pursued the effects of the Lebel projectile on cadavers most thoroughly, and their work will always be prized by those who happen to explore this field of literature henceforth. Bruns in Germany and Habart in Austria have made valuable experiments of late, which have served to show in a scientific manner the precise effects of the Mauser and Mannlicher projectiles.

A study of the hand weapons forming the armament of the different European armies shows that, though the guns themselves may vary in their mechanism, the weight and caliber of the projectiles are very much the same. The calibers vary from 6.5 mm. to 8 mm. The velocity and energy of the projectiles differ but little. In fact, the guns and their ammunition are so similar that the ballistic qualities of one gun will answer very nearly for those of another; and we may add also that within certain limits the wounds inflicted by the projectiles are the same.

A study of the effects of the projectiles on cadavers brings out prominently the fact that the amount of destruction is guided by the same mechanical laws which governed the study of the effects of the older and softer leaden projectiles.

If we look back upon the conditions which influence destructive effects in wounds we will find prominent among them three factors: (1) Velocity of the projectile; (2) resistance on impact, and (3) deformation of the projectile.

It was while bearing these factors in view that the ballisticians predicted the effects of the modern bullet long before it was even tried, and it was a correct appreciation of these very factors which prompted Longmore to pen the following lines twenty-three years ago. Says Longmore: "The materials of which bullets are composed will influence to a certain extent the nature and character of the wounds caused by them. If bullets of steel or any similar hard and coherent metal should ever be found capable of being economically employed in firearms many of the ordinary features of gunshot wounds as they at present exist will be materially changed. In proportion to the increase of hardness and cohesive force of the metal the greater will be the ease with which the brass plates and other accouterments, the strong bones of the extremities, the vault of the cranium, and any resisting structures, will be perforated by it. Again, we shall have bullets which will not become softened at ordinary increases of temperature, broken and dispersed in fragments, subject to loss of substance, and capable of undergoing the various alterations in form which leaden bullets are apt to assume on coming in collision with certain external objects and hard parts of the body."

When we reflect that the steel mantle projectile is in use to-day, and that its penetration which has excited the wonder of the military world should depend upon its well-nigh indestructible hardness for the human body, we must read with more admiration than ever the prophetic words of the great surgeon.

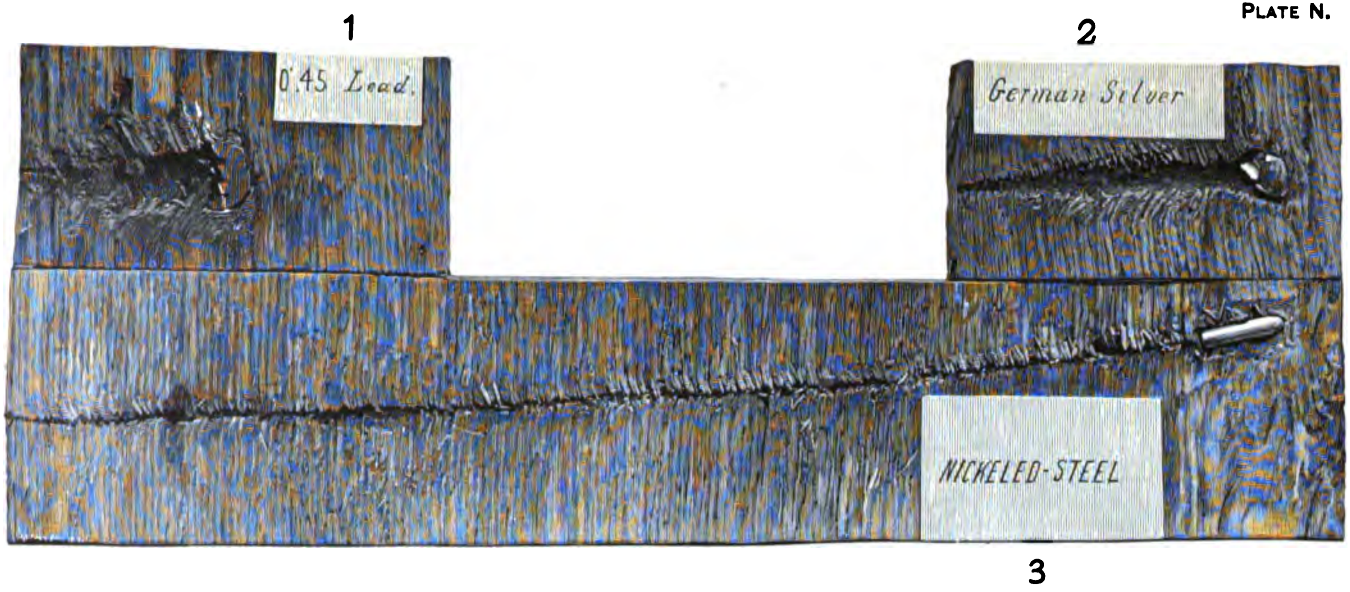
If the velocity, the resistance on impact, and the hardness of projectiles were constant, we would find no hesitancy in stating, *cæteris paribus*, that the destructive effects of projectiles would remain the same.

I believe we can take for granted that the velocity of the different mantle projectiles is about the same. As to the resistance on impact that also may be considered the same; that is, adult bodies will offer about the same resistance in their different anatomical parts. For instance, the femur of one individual will offer about the same degree of resistance encountered in the femur of another, and we may take for granted that the calvaria and tibiæ of different subjects will each offer about the resistance found in corresponding parts of the same or other subjects.

Having determined that the velocity and resistance on impact are pretty constant, what can we say of the third factor concerned in determining the amount of destructive effects, namely, the hardness of the different projectiles? We must assume in studying the effects of modern projectiles that penetration with them is determined as formerly by the hardness and coherence of the metals entering into their composition.

If all the mantle projectiles were composed of the same metal, or metals having equal coherence, we might expect the deformation to be always the same. But there are great differences found as regards the materials composing the projectiles and their mantles.

PLATE N.



Shows the penetration in hard oak, against the grain, 3 feet from the muzzle, of the following projectiles:

1. ."45 caliber leaden projectile, 500 grains; I. V., 1,300 f. s. .... 3."2
2. ."30 caliber German silver jacketed projectile, weight, 220 grains; I. V., 2,000 f. s. .... 5."3
3. ."30 caliber nickel-steel jacketed projectile, weight, 220 grains; I. V., 2,000 f. s. .... 19."5

The latter was not deformed.

The Austrian, French, and Russian projectiles are made of hard lead (lead alloyed ith antimony), the Belgian and German ones of soft lead. The mantle of the ussian and French projectiles consists of Melchior metal, whilst the mantle of the ustrian projectile is made of nickel steel. The Germans, Belgians, and Turks use ickel-copper bronze. The nuclei and mantles are all cylindro-conoidal in shape, ıe former fitting inside the latter.

Copper, German silver, and cupro-nickeled steel compose the jackets of the man-ed projectiles with which we are most familiar in this country. In some recent ɛperiments at Frankford Arsenal the maximum penetration in solid blocks of oak ɔt thoroughly seasoned, fired across the grain at 3 feet from the muzzle, with a riking velocity of 2,000 foot seconds, the results were found to be as follows:

	Inches.
0 grain copper-covered bullet penetrated	4
0 grain German-silver-covered bullet penetrated	5.3
0 grain cupro-nickeled steel-covered bullet penetrated	19.5

The copper and German-silver-covered projectiles were very much deformed when covered, whilst the cupro-nickeled steel retained its shape unaltered.

Since the velocity of the projectiles and hardness of the blocks were constant, e must attribute the difference in penetration to deformation.

The copper-covered projectile.—The use of the copper mantle has never met with uch favor, and I believe Portugal and Italy are the only powers that have adopted with the new armament. Owing to the ease with which it deforms its penetra-on as shown in oak is very limited. The yielding nature of the metal renders it ecessary to cannelure and lubricate the mantle to prevent deposition of the copper ı the steel barrel. The poisonous effects of copper on the tissues is another objec-on which has been advanced, and some of the writers on the subject have even one so far as to claim that the use of copper bullets is contrary to the principles the St. Petersburg convention of 1888, "that prohibits the use of arms which ould uselessly aggravate the wounds of men placed hors de combat or that would ender their deaths inevitable."

German-silver-covered projectiles.—On comparing the results obtained at Frankford rsenal with the German-silver-covered projectile upon cadavers with those obtained y Bruns with the nickel steel of the Austrians I am led to believe that the penetra-on of the two projectiles is with possible preference for the nickel steel about the ıme. The nickel-steel mantle of the Austrians is the most yielding of the small aliber projectiles used by the foreign armies.

In our experiments at Frankford Arsenal with the German-silver projectiles upon n cadavers 10 per cent of the mantles parted entirely from the nucleus upon col-ding with resistant bone between the 100 and 200 yards ranges, whilst 50 per cent f the projectiles were more or less flattened at the conical end.

From experiments at relatively short ranges—between 17 to 25 yards—there is rea-on to believe that separation would take place in every instance of impact against esistant bone. The separation at these relatively short ranges showed destruction f the envelope into many small sharp fragments, stripping of the lead, and com-lete mushrooming of the nucleus, all of which add vastly to the explosive effects t short range.

Cupro-nickeled steel-covered projectiles.—As seen by the penetration in oak cupro-ickeled steel offers more resistance than probably any mantle ever tried so far. lthough I can not quote from experiments on cadavers, it is doubtful if this mantle ill ever part from its nucleus upon impact against any tissue of the human body, owever resistant. If this be true, the addition of the cupro-nickeled steel mantle the projectile of small caliber will make this the ideal bullet. As long as it pos-sses momentum its penetration will not be impaired by deformation at least.

The flattening which the conical end of the German-silver mantle so often sus-ains upon colliding with resistant bone impairs its future penetration and, it may e said, its integrity, for the chances are that upon striking another bone in a sec-nd individual as resistant as that traversed in the first the impaired mantle would ıpture, a circumstance which would about arrest its work of destruction in men eyond the second individual hit. We may assume, then, that the fabulous stories ɔld of the penetration of the small-bore projectiles, which enables them to traverse ur men at 100 yards, can only be true of a projectile like that covered by cupro-ickeled steel, whose penetration and integrity are never impaired by alteration of rm. It is evident, then, that any explosive effects to be noticed from the latter ill in no way be due to deformation, and that its destructive effects within the ex-losive zone will be correspondingly less. In a military sense the effectiveness of ıe cupro-nickeled steel-jacketed projectile will be greater since it will have penetra-ion sufficient to wound more men. In a surgical sense the projectiles of softer ex-erior, like those covered by German silver, will be more destructive, since upon col-ding with the first or second resistant bone they will be destroyed on impact, and the numerous fragments of the leaden nucleus and shell, each acting as a secondary projectile, will add to the work of destruction in the part hit. For this reason the stopping power of the German-silver-jacketed projectile will be greater on horses in a charge of cavalry upon foot troops. This statement is not made to disparage the effectiveness of the cupro-nickeled steel-jacketed projectile in this particular, because it is difficult to conceive how such a charge could be successfully made against any armament using the small projectiles of hard exterior, whether deformation is expected or not; but the statement is made to emphasize the fact that those projectiles which are apt to become destroyed on impact increase the explosive effects at close range, hence their superiority in stopping power. Because the stopping power in the cupro-nickeled steel is slightly less, some of the experimenters have been led to remove a small bit of the conical end of the casing sufficient to expose the lead in order to invite deformation on impact. This is an expedient which will doubtless be practiced in repelling cavalry, and also by the sportsman in hunting large game. The progress of civilization, so manifest in the use of the new armament, will hardly allow the employment of a projectile more deadly, if anything, than the murderous leaden bullet which we have just discarded, and it is to be hoped that the comity of nations will frown down any attempt to increase the destructive effects of the cupro-nickeled steel bullet in war.

As stated already, of the three factors which determine the amount of destruction in gunshot wounds, namely, velocity, resistance on impact, and deformation of the projectile, the first and second are pretty constant. If, now, we employ a mantle of indestructible hardness for the human body, like cupro-nickeled steel, for instance, the third factor will have been made constant, gunshot wounds will be more humane, and the results of observers henceforth will be more uniform.

GENERAL CONCLUSIONS ON THE SUBJECT OF GUNSHOT INJURIES BY THE PROJECTILES OF HARD EXTERIOR IN TIMES OF WAR.

1. The differences between the effects of the bullets of hard exterior and the leaden projectiles lie in the greater penetration of the first, and this in turn is due to greater velocity, diminished frontage, and the hard envelope which diminishes the chances of deformation.

2. For the two bullets, especially when a resistant bone is struck, the amount of lesions is in proportion to the velocity.

3. The shock impressed upon a member increases with the velocity, whether a bone is traversed or not. It is, however, always greater with the leaden projectiles.

4. The explosive effects at very short range are about the same for the two projectiles. They continue, however, up to 350 yards with the smaller projectiles and cease at about 200 yards with the leaden projectiles.

5. The smaller frontage of the hard mantle projectiles causes them to inflict something after the manner of a subcutaneous wound, when the soft parts alone are traversed, and the small wounds of entrance and exit and the narrow track of the missiles are favorable circumstances to a rapid healing.

6. Although we made no notes of injury to blood vessels, Johann Habart, royal and imperial surgeon, Austrian army, who mentions some observations in this line with the nickeled steel-covered projectile, states that "the blood vessels are seldom torn, and that they are not closed so easily by coagulation as those severed by leaden projectiles. The latter are more apt to bruise and lacerate the blood vessels, facilitating thereby the formation of thrombi. On account of the smaller aperture in the skin and soft parts the wounds bleed generally less than those made by the soft leaden bullets. The hemorrhage is easily stopped by coagulation."

7. A wound of exit, the diameter of a finger or thumb in area, indicates for either bullet fracture of bone with splintering, and in accordance with the observations of Delorme and Nimier, who experimented with the projectile of the Gras as compared with the effects of the Lebel projectile, tears of similar extent in the clothing are alike indicative.

8. Injuries inflicted outside the zone of explosive effects upon the diaphyses of long bones always show less comminution with the small bullets of hard exterior. The fissures are often subperiosteal and the fragments are larger.

9. Beyond the zone of explosive effects the projectiles of hard exterior almost invariably perforate or gutter the joint ends of bones, and the lesions of the articulations are never so grave.

10. The projectiles of hard exterior lodge more rarely in the tissues than the leaden bullets. The latter more often leave fragments of lead in the foyer of fracture.

11. Delorme and Nimier have noticed that the large leaden projectile and the smaller projectile of hard exterior detach pieces of clothing (cloth, linen, leather), which are irregularly round, varying in size with the frontage of the projectile.

The track of the wound in the soft parts is generally paved by fine filaments, whilst shreds are often found arrested at the seat of fracture.

12. The projectiles of hard exterior are more humane than the old. Resections and amputations will not be so often required hereafter. Soldiers will be more often restored to the State useful members of the community instead of cripples and pensioners, and in point of economy the new projectiles confer a great advantage.

13. As the projectiles of smaller caliber with hard mantles are less apt to lodge or to carry foreign substances into the wounds, we will expect to find fewer cases of suffering due to the remote effects of unextracted foreign bodies. This, we should bear in mind, is one of the most frequent sources of protracted suffering after gunshot wounds.

14. The frontage of the new armament bullets being much less, and the fact that the bullets seldom lodge, will contribute to increase the percentage of recoveries in gunshot wounds of the lungs, and this will be especially true in the wounds of this class which may be inflicted beyond the zone of explosive effects.

15. When the new bullets do become lodged they will be less apt to cause irritation for two reasons—they are lighter in weight and seldom deform.

16. Wounds of the face from the new projectiles will cause less disfigurement.

17. Fatal primary hemorrhage in the field. There are no statistics bearing on the percentage of cases of fatal primary hemorrhage in battle, because, as a rule, the surgeons are so busy in caring for the wounded that there is no time to devote to the dead, but it is generally admitted that the number of cases of fatal primary hemorrhage is large. When the leaden projectile encounters resistant bone pieces of lead are nearly always detached at the moment of impact. If the momentum of the projectile is still sufficient the pieces of lead and splinters of bone act as secondary projectiles, and the danger of wounding neighboring vessels is consequently increased. Since the new projectiles, outside the zone of explosive effects especially, cause less shattering, and, as they seldom deform, the amount of danger to blood vessels will not be so great, hence the cases of fatal primary hemorrhage in future battles will be less.

18. All things considered it is doubtful if there is just ground for the pessimistic view held by some that the wars of the future will be much more deadly than ever before. The change from the smooth-bore gun and spherical bullet to the rifle and cylindro-conoidal bullet increased the number of wounded vastly and added to the severity of wound. Owing to the employment of smokeless powder, a flatter trajectory, and greater penetration, the change to the smaller jacketed projectiles will increase the mortality and number of wounded still. but the wounds as a whole will be less grave—more humane. If we consider the latter with the improved sanitation which will surround the soldier of the future, as well as the surgeon's ability in the application of his primary dressings to prevent infection, I believe we may confidently assert that the horrors of war as depicted by the older writers will never again be seen.

Having been designated by the Secretary of War, about two years ago, to preside over the medical section of the War Department exhibit at the World's Columbian Exposition, I conceived the idea at the onset of the work at Frankford Arsenal of preserving the specimens of bone lesions and the missiles producing them as a collection to be exhibited among the articles to be displayed from the Army Medical Museum. I am happy to state that sixty-seven specimens and their corresponding projectiles are now on exhibition, and that they are eliciting great interest. I am indebted to Dr. Guy Hinsdale, of Philadelphia, for their preservation and for much assistance in securing accurate information concerning the destructive effects of the missiles, in the bony structures especially. The photographic plates were prepared by Hospital Steward John Moser, U. S. Army.

THE SANITARY CONDITION OF THE ARMY.

The sanitary reports furnished monthly by post surgeons in accordance with the requirements of Army Regulations (Par. 1642) are of the utmost practical value in leading to the accomplishment of sanitary improvements. No form for this report has been issued from this office, so that medical officers are generally free to follow their own views as to the best method of presenting their opinions and suggestions, but in some of the military departments medical directors have issued a form which presents certain prominent sanitary headings to insure that no material point will be overlooked.

There is an inherent tendency to routinism in the rendition of all papers that have to be furnished regularly and at short periods, but this tendency is never so great in the case of these reports as to prevent due notice being taken of any serious sanitary evil. Once embodied in the report the evil is certain to receive full consideration, and in fact in the majority of cases it may be considered as already remedied, for the regulation cited provides for an almost automatic action against it. The recommendation is submitted first to the post commander, who indorses his action on the report, and before forwarding it to higher authority sends it back to the medical officer for his information and for entry in the Medical History of the post. Should the commanding officer concur in the recommendation of the medical officer and have at his command facilities for carrying it into effect, he issues the necessary orders in the case. If while concurring he should lack either the authority or facilities for effecting the change the recommendation is forwarded for the consideration of higher authority. On the other hand, if the commanding officer disapprove of the suggested change he is required to state the reasons which have influenced him that the department commander or the War Department may have a full knowledge of the facts and arguments concerned.

The question whether a post surgeon should report a second time against insanitary conditions and repeat recommendations that have already been unfavorably regarded by his commanding officer was raised during the past year. The Major-General Commanding, after a careful examination of the case, decided that the post commander "fell into a manifest error in condemning the action of the post surgeon in calling his attention for a second time to what the surgeon considered insanitary conditions of the post. It was not necessary that the commanding officer should make an elaborate explanation why he could not conform to those conditions unless for the information of higher authority. It might well be assumed that the post commander would do the best he could under the circumstances, but he ought not to complain because the surgeon, in the commendable desire to do all that was possible for the health of the command, ventured to call his attention to the subject a second time."

These sanitary reports filed in the office of the Surgeon-General constitute a sanitary record of each of the posts. From the reports of the past year the following remarks on present sanitary conditions have been compiled:

QUARTERS.

Great improvements have been made during the past few years in the character of the quarters provided for the Army, and the officers of the Quartermaster's Department are entitled to great credit for their earnest and intelligent efforts to have all work of this nature carried out in accordance with advanced sanitary views. Nevertheless it appears to me that when any important work of construction, alteration, or repair is under consideration it would be well to have on record the views of an officer of the Medical Department on any sanitary questions involved. In many instances the medical officer has a special knowledge of the locality in its sanitary bearings that is too valuable to be overlooked. I desire, therefore, to urge the recommendation made on several previous occasions by my predecessors in office, that the plans of all buildings hereafter to be constructed, of alterations to be made, or of sanitary improvements to be instituted at our military posts be submitted to a board of officers, one member of which shall be a medical officer. The construction and improvement of our military posts are matters of so much importance as to merit consideration by boards of officers before commencing work on plans drawn up by an individual. Moreover, on account of sanitary considerations connected with selection of site, construction of barracks and other post buildings, with their heating, lighting, and ventilation, drainage, sewerage, and water supply, the Medical Department should be represented on such boards. It is better to build well from the first than to have to make alterations in a completed structure, for these are always expensive and seldom satisfactory. Indeed the defects are sometimes so radical that no remedial measure other than reconstruction is possible. Col. J. C. Baily, assistant surgeon general, commenting recently on the sanitary conditions of Fort Sam Houston, Tex., makes the remark: "It would not be possible to select in the vicinity of San Antonio a worse site for a post than that on which Fort Sam Houston is built; and the worst spot on the reservation was selected for the barracks. So far as I can learn the usual custom of not consulting any sanitary officer was adhered to in locating and planning the barracks." The approval of a board before final action is taken would tend to eliminate mistakes and lessen the need for future changes.

The sites of some of our military posts are open to criticism on account of their environment. Thus, Jackson Barracks, La., irrespective of its high-ground water level, is objectionable on account of the slaughterhouses and rendering establishments in its neighborhood. The location of the recruiting depot, Columbus Barracks, in one of the wards of the city of Columbus, is the cause of the high rate of sickness and nonefficiency from venereal diseases among the newly-enlisted men.

Overcrowding of the men in quarters was reported from a few posts, such as Forts Columbus, Sully, and Grant, and Columbus Barracks. At the first-mentioned post Maj. Hoff attributed a sickness somewhat beyond the normal to overcrowding and deficient ventilation, and instituted temporary relief by boards 6 inches wide, to raise the lower window sashes. He recommended that plans be formulated for adequate ventilation of the squad rooms. At Fort Grant, Capt. Birmingham attributed the prevalence of sore throat and malaise among the men to overcrowding and defective ventilation of the dormitories. He found only 500 cubic feet available per man, and reported the odor at night as intolerable. Measures were immediately taken to improve the conditions at this post. At Fort Sully, also, at one period, two of the barrack buildings were overcrowded. Generally this overcrowding of dormitories is merely temporary, due to an accidental increase in the garrison. This is especially true of the recruiting depot at Columbus Barracks, where the seasonal variation in the number of recruits received is very marked. Recruiting is more active in the severe weather of winter than during the summer. The average monthly number joining the garrison in December and January was 180; during the summer only 115.

The buildings at a few of the posts are old, dilapidated, and leaky. The makeshift sanitary arrangements at Fort Keogh should not be permitted to continue unless the post is likely to be abandoned in the early future. Among its many needs are roomy and well-ventilated quarters for the troops. The best of the officers' quarters at Eagle Pass, that occupied by the commanding officer, is not so good as the quarters ordinarily provided for a noncommissioned officer at any other post. The quarters of the men have ample space and good ventilation, but the roofs leak and the walls have to be propped to prevent them from falling outwards. All the occupied buildings at Fort Custer are old. with the exception of one set of quarters and the guardhouse. The barracks, particularly, are much dilapidated; they can not be kept comfortable in winter. As the abandonment of Fort Whipple has been in contemplation for some time few repairs have been made to the buildings, and the post presents a worn and dilapidated appearance. The buildings are wooden, decidedly overcrowded, and ventilated only by the doors and windows. With few exceptions, all the buildings at Fort Yates are old and poorly adapted for the purposes for which they are used; but they are in as good sanitary condition as it is possible to have them, in view of the uncertainty as to the continuance of the post. The barracks are loose-jointed and cold in winter, permitting the entrance of cold winds and snow. Storm doors and double window sashes were provided on the recommendation of the post medical officer.

Perhaps the rudest and poorest accommodation for officers and men to be found in the Army are met with on the Indian reservation at San Carlos. The officers' quarters consist of small, two or three roomed adobe huts, with a rough frame structure behind for kitchen and dining room. On the opposite side of the parade ground are eighteen pine-board shells 32 by 16 by 18 feet, shingled, but without lining or ceiling. These have no windows, but a strip of canvas 4 feet wide takes the place of the boards in the upper part of each side wall. The light admitted is not sufficient to enable the men to read with comfort. The orderly rooms, kitchens, and dining rooms are of canvas. Three sets of officers' quarters are occupied by the noncommissioned staff and their families; but most of the married soldiers live in such quarters as they can construct for themselves, usually of brushwood and old canvas. These quarters afford protection against neither the excessive heat of the long summer of Arizona nor against the cold nights of its winter months, when the temperature drops as low as 11° F. It is understood that the consent of the Interior Department to the withdrawal of the troops from the agency has been requested.

SAN CARLOS, ARIZ.—*Lieut. P. Shillock:* The officers' quarters are small but in good repair and satisfactory. The enlisted men's quarters are very poor. They afford only a slight protection from the weather. During the summer they are exceedingly hot. Upon trial I found the temperature 110 degrees inside of one of these quarters, and in general it is only 2 degrees lower than that of the thermometer in the latticed box in the hospital grounds. In connection with this I would respectfully call attention to the extremely high temperature at the post during the summer as shown by our meteorological report. For the four months, June, July, August, and September of last year the mean daily maximum was above 100° F. One month it averaged above 110° F. The records of the preceding year show even higher temperatures, the highest being 117 degrees in the shade. Shortly after sunrise the thermometer runs up nearly to the maximum, and only drops to any appreciable extent about sunset. This high temperature every day for four months at a stretch is very hard to endure, as the quarters the men occupy afford only the slightest protection from the heat. On the other hand, the adobe quarters of the officers afford a most appreciable and gratifying protection, lowering the temperature as much as 20 degrees. In stepping from the adobe portion of an officer's quarters into the wooden portion behind a very decided difference in the heat is at once apparent.

In the winter the men's quarters are again a poor protection against the cold. Although San Carlos is scorching hot during the summer days it is bitter cold during the winter nights. Our minimum temperature shows the average daily minimum for three months to be below freezing, the lowest recorded being 11° F.

On account of the poor material used in building the men's quarters large cracks and holes exist in all the buildings, making them very drafty. Their equal heating is impossible. A hot fire in the center will warm the immediate vicinity, leaving the remainder cold and drafty. A much larger amount of fuel is required to heat these quarters than would be required to heat better-built quarters.

> San Carlos is afflicted with many severe dust storms, each usually lasting about three days. During one of these the men in their quarters, with canvas sides and numerous cracks and holes in the walls, are literally covered with dust and remain so during the whole storm.
>
> If it is contemplated to provide suitable barracks for the men stationed here I would recommend thick-walled one-story adobes with low, wide verandas and double roofs, so that the air may circulate between the roofs and keep the buildings cool. In this connection I would also call attention to the great desirability, when making plans for these buildings and putting them up, to provide for good ventilation by a sufficient number of inlet shafts under the floors, opening under the stoves, and ridge outlets.
>
> At present, for want of other quarters, three of the twelve sets of officers' quarters are occupied in part at least by noncommissioned officers. The laundresses are put in the poorest kind of quarters, tents made out of condemned canvas. Suitable adobe buildings, either in double sets or all under one roof, are greatly needed for the noncommissioned officers and married enlisted men.

The extract given above from Lieut. Shillock's report on the condition at San Carlos brings to view the oppression and strain on the vital energies caused by prolonged hot weather at some of our posts in Arizona, New Mexico, and southern Texas. Capt. Pilcher wrote of similar conditions at Fort Ringgold as follows:

> This post has long been notorious as the most undesirable station in the Department of Texas, if not in the entire Army, because of the long-continued heat and drought to which it is subject. In the heated season, which extends from March to November, life is hardly endurable to the Caucasian except in rooms of sufficient height to contain air enough to afford free respiration and to admit of a sufficient mass of air between the body and the roof upon which the rays of the sun strike. The second story rooms of the officers' quarters have long been the source of excessive discomfort, unquestionable suffering, and considerable illness. Only 9 feet high at their loftiest altitude, they run down to 4 feet at the sides. The windows are perched in the roof or high in the gable, so that even the breath of air which their small size might permit to pass can hardly reach the unfortunate inhabitant. The process of slow roasting is sufficiently uncomfortable in itself, but when suffocation is added the strain upon human endurance is rather severe. I don't think I am exaggerating when I say that these low-ceiled rooms have been productive of more suffering, discomfort, discontent, and profanity than any other single feature of the post. The expense of raising the roofs of the officers' quarters to two full stories will be slight compared with the great advantage that will accrue to the occupants. Upon hygienic and climatic grounds I warmly urge that this be done.

The above extracts represent the discomforts sometimes attaching to military service in the West. The insanitary equivalent of the pine-board barracks of San Carlos is in the East the casemates of our harbor fortifications. Many of these are still in use, as at Forts Warren, Wadsworth, and Adams, although every medical officer stationed at these forts has reported against the occupation of their casemates as quarters. They are damp and cold, and would cause much sickness if fires were not kept in them constantly. Arms rust in them, leather becomes moldy, and clothing and equipments decay. In summer when there are no fires moisture bedews the interior of the walls and trickles to the floor. Gen. Warren, in 1874, gave a satisfactory explanation of this excessive dampness. The casemates are arched with brick, the arches covered with sheet lead, and the valleys between them filled in with [illegible]n. A thin layer of concrete with a brick pavement over all completes the roofing. The weight of the covering above the lead presses the hard parts through the sheet metal, and thus permits water to reach the arches and soak from the valleys into the interior of the casemates. Moreover, in winter the casemates become chilled throughout and retain a low temperature far into the summer, as has been shown by the presence of ice in the valleys when uncovered for repairs. The moisture of the warm air of summer entering the casemates is immeately condensed on the cold walls. Nothing other than Gen. Warren's description is needful for their condemnation as living and sleeping rooms.

The guardhouses of the Army have participated in the general progress of improvement so that complaints from medical officers, formerly so frequent, of their insanitary condition are now exceptional. During the past year such complaints have come only from Angel Island, Davids Island, and Madison Barracks. At the first mentioned post the room for the guard is reported as so small, uncomfortable, and infested with bugs as to make a tour of guard duty almost a punishment. At the second the guardhouse is represented as destitute of all the features essential to the health, cleanliness, and comfort of the inmates and insusceptible of satisfactory alteration or repair. Estimates have in this instance been prepared for a new building. At the third the prison room is 20 by 18 feet, with but one window and an average occupancy of 6.6 men; cells cold, dark, and damp, with the only aperture for light 12 by 3 inches. In this instance, also, favorable action was taken by the department commander in directing that the subject of a new guardhouse be embraced in the annual report of inspection of public buildings.

The quarters occupied by married enlisted men at some of our posts are wholly unfit for occupancy. Reference has already been made incidentally to those of San Carlos. Those at Fort Yates are described as wretched. Casemates are occupied at Fort Warren where from the chill, dampness, and bad air the children are anæmic and show signs of rachitis. At Fort Grant these quarters are in bad repair and crowded to the point of indecency. At Fort Vancouver they are reported as scarcely habitable, built on ground honeycombed with disused privy pits and cesspools. At Fort Missoula the old log huts thus occupied should be destroyed, as also some shanties owned by a civilian and rented to married soldiers. The best of these, constructed by the soldiers for themselves and families, at Fort Du Chesne, are of logs, but most of them are of scrap lumber eked out with condemned canvas and old coal-oil cans, the rooms without flooring, small, damp, and dark. Sanitary improvements can not be instituted at the expense of the occupants, and at present there are no means for effecting them in any other way. Quarters like those at the posts mentioned are breeding places for disease; and as garrisons become larger the problem of quarters for the married soldiers is likely to become more complex. I recommend a return so far to former methods as to provide public quarters for a limited number of married men in each organization, all others being strictly prohibited from having their families at the post. A provision of this kind would be regarded as a privilege awarded to deserving soldiers, and would permit the whole of these huts and shanties to be destroyed.

FORT WARREN, MASS.—*Capt. P. R. Egan:* Twelve months ago last March the quarters of the married men situated outside the fort were pulled down and the families sent to live in basement casemates. This fact has added a grave sanitary defect to this post. In my report for September, 1891, I thus alluded to their condition: "They are situated in basements into which the rays of the sun scarcely ever gain admittance. * * * Add to this the inevitable dampness of basement casemates, the bad hygienic conditions arising from cooking, washing, and living in a couple of rooms, and no one will wonder that the young children are anæmic and beginning to show evidences of rachitis. * * * I repeat, that they are not fit to live in, and that so long as people live in them, as they do now, this post can not be put in a good sanitary condition, and would be little better than a pest house in case of an attack of cholera. The engineers' boarding house, to which attention was called in a recent special report, is dirty, overcrowded, and unsanitary. They are both equally a standing menace to the safety of this garrison in case of an attack from cholera."

On the other hand, from certain northern posts came reports of intense and continued cold, against which the clothing issued by the Government was inefficient as a protection to the person and the allowance of fuel inadequate to properly warm the barrack rooms. When the thermometer was at —54° F. at Camp Poplar River, in February, the barracks, built of logs placed upright in the earth, were so poorly heated that the men wore their overcoats in bed, and in many cases left their beds during the night to sit by the stoves; the hospital cook performed his duties in his furs; the wards at night were often below zero, and a servant in the kitchen of one of the officers had one of her feet frozen while at her work.

To illustrate similar conditions at Fort Assiniboine, the post surgeon reported that ice formed in a sleeping room within 4 feet of a coal stove which was kept heated with burning coal during the night. The medical officer at this post took exception to the fuel in use, and particularly to its use in hospital. He reported it as of an inferior quality of lignite, crumbling on exposure, and in burning leaving a large residue of ash. slate-like masses, and slag. Its fires required constant attention and gave origin to clouds of fine dust, which floated in the atmosphere of the rooms and settled on everything, doing much harm in diseases of the respiratory organs, which are the usual cases in hospital in severe weather. A return to the use of hard coal was recommended and effected. Capt. Clendenin, at Fort Brady, also reported on the inadequacy of the allowance of fuel, and referred to the injustice of the present laws governing the sale of fuel to officers. An officer exposed to all the rigors of a severe winter by his assignment to duty at such a post as Fort Brady has to expend from $12 to $18 per month for fuel to keep his quarters comfortably warm, while his more fortunate comrade, stationed in an equable climate, is exposed to neither the inclemencies of the season nor the expense of endeavoring to protect himself and family against them. I commend this subject to the consideration of higher authority, giving herewith an extract from Capt. Clendenin's report:

> I gave my personal attention to the economical use of fuel both in my own house and at the hospital, and I was astonished at the amount of fuel necessary to warm the buildings. In my opinion the quarters occupied by officers should be properly heated at the Government expense. At present there is too great a discrimination between officers serving North and those serving South in the way of necessary expenses. To make my meaning plain, permit me to allude to my own experiences: While serving in the Department of Texas my fuel expense amounted to about 75 cents per month for the trifle of wood consumed in cooking and an occasional heating fire; since serving in this department it has been with the closest economy that my total allowance has sufficed. It seems to me to be unjust that while an officer serving in Texas can pass the winter in comfort on an expense of 75 cents or $1 per month, one serving at this post should be compelled to spend $12 or more to keep warm. During the past month there was burned in my quarters over 10,000 pounds of anthracite coal, and none was wasted, for I appreciated the difficulty of warming the men's quarters and kept an eye on the consumption of coal. So that I burned in my quarters last month $18 worth of coal as against 75 cents or $1 in Texas. Had I not had a supply of coal purchased in former months, in anticipation of this increased consumption in the new quarters, and had I paid for the coal used in excess of my allowance at current market prices, my coal bill would have been $22. You will pardon the personality of this in referring to my own affairs, but I can speak with greater exactness. Every officer at this post has exceeded his allowance in the amount of fuel the past month, and it seems to me a hardship that it should be so. If it is not deemed expedient to make such issue of fuel to officers as I have suggested, it seems to me no more than fair that officers should be allowed to purchase at present rates all the fuel necessary for use in their quarters upon their certificate that it is for their own use, in precisely the same manner that commissary stores are purchased and with no more limitation.

Some medical officers in their reports call attention to the practice of flushing the floors of quarters, dormitories, dining halls, and other occupied rooms. At many posts this method of cleaning up is regarded as an indispensable preliminary to inspection of quarters. It has long since been given up in the Navy on the sanitary principle that a damp ship is an unhealthy one. The same principle applies to barrack rooms. It is important that the soil beneath the flooring should be kept as dry as possible, and this can not be effected if water is flushed on the floors and permitted to run through open seams or broomed into knot holes or auger holes specially bored to permit of this method of disposing of the wash water. One medical officer, in view of such practices, felt called upon to report to his commanding officer that—

> The barracks having been for the most part newly floored during the month. I recommend that positive orders be given that no anger holes be bored through these floors for the purpose of allowing water that has been used for cleansing purposes to escape beneath them.

Another medical officer states that he has served at posts where the men had the alternative of staying in quarters with a thoroughly wet floor or going out of doors with two feet of snow on the ground and the thermometer at zero. As catarrhal and rheumatic affections are prone to be developed by flushing, commanding officers should prohibit the practice. Floors when lightly stained and waxed can easily be kept clean, dry, and wholesome.

The mosquito was reported at one post—Key West Barracks—as a pest, against which the protection of wire screens was recommended. The post commander indorsed the recommendation of the post surgeon in these terms:

> If the men can neither sleep in peace nor eat in even comparative comfort their poor ration they are apt to grow reckless and seek relief, or rather oblivion, in drinks, regardless of the consequences that may ensue as to health. The mosquito is always here from New Year's Day to St. Sylvester's. He is always active, always an annoyance; but if he continues during the coming four months as during the past one, especially the past week, we will scarcely care to guard against yellow fever; there's some credit in having to deal with that.

The house fly at certain western posts is almost as much of a pest as the mosquito appears to be at Key West. Wire screens were recommended as a protection at Yellowstone. The following is from the report of the post surgeon for the month of March:

> I am informed that among the many improvements embodied in his annual estimate by the post quartermaster is an item for door and window screens for barracks and quarters. I would heartily recommend the approval of this item, not as a luxury but from a sanitary point of view. Never have I seen flies in greater number than at this post during my one summer here. In my own kitchen meat has more than once been fly-blown after having been taken from the ice box and before it could be prepared for cooking. It has long been known that the bite of a fly was capable of innoculating with the virus of malignant pustule, and recent experiments tend to prove what has long been suspected, that the insect in question is capable of conveying the germs of cholera and other diseases.

The quarters provided for the Indian companies were in some instances only makeshift accommodations. At Fort Sidney their barrack room was so crowded as to call for the recommendation of tents to relieve the dormitories. At Fort Omaha the tents in use were represented as old, torn, worthless, all dirty, and some filthy. At Fort Snelling an old, unventilated, and disused prison was fitted up for their occupancy. The crowding in barracks no doubt increased the consumptive tendency to which the Indians are so prone when they give up their wild life for a semicivilized mode of living. All the reports refer to the difficulty of keeping them clean and to their habits of intoxication. The occurrence of injuries and deaths in drunken quarrels at Forts Wingate and Bowie has already been mentioned. The following extracts give an idea of the quarters and habits of these men:

FORT SIDNEY, NEBR.—*Capt. L. S. Tesson*—January: I invite attention to the crowded condition of I Company quarters and recommend that the number of beds in the main dormitory be reduced to 20. With the present number of occupants no man has sufficient floor space for comfort and less cubic air space than is accorded in any well-regulated lodging. The Indians occupying these quarters being accustomed to an out-of-door life, and to sleeping either under tentage or in the open air require more air space than their more civilized brethren, and must necessarily be much incommoded as far as their health is concerned by this cramped condition. Moreover, the race being much afflicted with diseases of the lungs, a given quantity of air would much sooner become contaminated through them than if breathed and exhaled by men of different constitutions.

As the ventilation of the room can not be improved upon for the present it would be the part of wisdom and economy to so increase the amount of air space per man as to diminish as far as possible the contamination due to exhalation from the bodies of the occupants, and I therefore recommend that, if no other building is available in which a portion of the company can be quartered, one, or, if necessary, two hospital tents be pitched in close proximity to the said quarters, framed and floored, and such number of men as will reduce the occupancy of the main dormitory to 20 be ordered to quarters in the tents.

The small dormitory in its dimensions allows of a fair amount of air space per man, but as there is no ventilation except through two windows it would be well if the occupancy of this room were reduced to 4.

The little room off the kitchen now accommodates 2 men with sleeping quarters. One of these men should be removed, as the room lacks ventilation except through one window.

February: The recent death of one of the Indians from consumption and the indisposition of a number of others with chest troubles would seem to emphasize the necessity of the changes advocated in report of January last, and as I am informed by the post quartermaster that the material for completing the changes resolved upon has not yet all arrived, I would recommend that such representations be made to headquarters as will expedite the shipment of the material still needed to render that company comfortable from a sanitary point of view.

FORT OMAHA, NEBR.—*Maj. A. Hartsuff:* I found several families of Indian soldiers who are permitted to live at this post in a deplorable condition. Their habitations are old worn out tents, so full of holes that they do not protect from the storms. There is no flooring to their tents and no boards inside nor about them. Each family of man, wife, and children is supposed to have one tent, such as it is, but in one case the tent is so old, torn, and worthless that the family to which it was assigned is generously taken in by another family. Their water-closet is a pit covered by an old "A" tent, and is so nearly full that a new pit should be dug at once. All of the tents are dirty and some are filthy. I refer to the tents as habitations, and as the married Indian soldiers are permitted to live with their families the tents are their authorized quarters. As several of the occupants of the tents are now being treated, and as all must be cared for if sick, I respectfully recommend that if they are allowed to remain at this post suitable quarters and accommodations be provided for them, after which they should be required to keep themselves and their surroundings clean and in good hygienic condition.

Lieut. Col. Dallas Bache, medical director: Respectfully returned to the Adjutant-General of the department, calling special attention to the condition of the Indian families as reported by the post surgeon. The houses and grounds at Fort Omaha should be put into as good a sanitary condition as possible during the present and ensuing month, and if it is necessary there should be an allowance of funds for that purpose. Whether Asiatic cholera will be introduced into this country this summer we do not know, but the relation of this post to this city is so intimate that every effort should be made to secure an unproductive soil at this post.

FORT SNELLING, MINN.—*Maj. C. K. Winne:* Attention is respectfully invited to the barrack accommodation of the Indian company. The police of the men and of the building is excellent, but the conditions under which this company lives are in every way as inconvenient and bad as I have ever seen. When the old prison now occupied by this company was abandoned it was considered that one source of disease was done away with. The building is not adapted to its present use: the rooms are badly lighted; no ventilation except through windows, and no provision for the escape of foul air, while the number of men in each squad room results in overcrowding. The ventilation would be improved by introducing ventilators in the ceiling, but these should connect with shafts running above the roof and not into a common roof space, because, besides "producing down drafts, openings of this kind, communicating with one reservoir of stagnant air common to a number of rooms, may, by the irregular action of the fires, supply the rooms with each other's foul air." Boxes were fitted up in an old wooden building as temporary earth closets, but seepage has commenced and the arrangement is only of the most makeshift kind. The facilities for bathing are very crude. Water heated on a stove has to be carried to the temporary bath tub, which is again emptied into pails, carried away, and thrown on the ground near by. No sinks can be dug here now, and none should be, as the old ones, which were in use when the former garrison suffered from typhoid fever, have been done away with, and there is no sewer system in this part of the garrison for water carriage. Unless proper quarters can be furnished for this company I earnestly recommend that it be transferred to some other post where it can be placed in better sanitary condition, or if that can not be done, the men had better be put into permanent camp in the upper garrison, with the use of the bathroom, and especially the use of the water-closets of one of the white companies.

Assistant Surg. Gen. C. H. Alden, medical director: It is recommended that unless some other disposition is made of this company estimates be prepared for such alterations in the barracks as will secure freedom from overcrowding, ample light and ventilation, and for proper bathing facilities and good water or earth closets.

FORT NIOBRARA, NEBR.—*Capt. Benj. Munday:* On the 18th of April a case of facial erysipelas occurred in the barracks occupied by Troop L, Sixth Cavalry (Indian). This was followed by three other cases. The first, second, and fourth cases were superficial and easily yielded to treatment, the average duration being eighteen days. Case third assumed a phlegmonous form from the beginning, and extended over the entire trunk, with œdema of the glottis, causing great difficulty in breathing and swallowing. It progressed favorably till May 17, when pneumonia supervened, involving the whole of the left lung and upper lobe of the right lung. Death occurred on May 20. After a thorough investigation it was supposed that the outbreak was due solely to the naturally filthy condition of the Indian for no case occurred amongst the white soldiers, although they occupied barracks in every way similar to those used by the Indians. The troop was put in tents and the entire barrack disinfected and whitewashed. Since that there has been no other case.

FORT BOWIE, ARIZ.—*Capt. R. W. Johnson:* The habits of the men belonging to the Indian company at this post are not satisfactory. There has been entirely too much drinking the past two months; but this is not surprising, as liquor in unlimited quantities can readily be obtained from a few neighboring ranches. As a consequence intoxication is common. Brawls are frequent, and if they were only allowed to retain possession of their arms it would be but a short while before their number would be materially decreased. The presence at this post of nineteen squaws, who are filthy beyond description, seriously militates against any progress towards civilization that might otherwise be made by the members of the company. It would certainly be no detriment to the service or to these men if their squaws and families were sent back to the reservation at San Carlos.

Another feature which calls for earnest criticism is their lack of cleanliness. Proximity even to these men makes this fact very apparent. The odor emanating from them is sickening, and arises from a neglect of personal acquaintance with frequent bathing. Strict orders were issued by their company commander that each man should bathe at least twice a week; but this order is evidently disregarded. Previous to enlistment it was not customary for these Indians to bathe during the winter season, and it is not surprising that difficulty is experienced in endeavoring to make such a radical change in their habits. In making an inspection yesterday of the bathroom of this company a large hole was seen in the bottom of one of the tubs, which appeared as though made by the sharp edge of a hatchet. From the well-known dislike to water manifested by these Indians it is fair to presume that this injury was not the result of accident.

Maj. D. L. Huntington, medical director: Great difficulty has been experienced in keeping the Indian soldiers clean and free from vermin. Their habits are not good, and they are hard to control.

FORT WINGATE, N. MEX.—*Maj. W. Matthews*—July: The habits of the men, particularly the members of the Indian organizations, have not been good. One homicide and one death from accident, both results of intoxication, have occurred among the Indians during the month.

December: The habits of the men have not been good. Five members of the Indian troop suffer from wounds received during the month resulting from drunkenness.

DRAINAGE, SEWERAGE, DISPOSAL OF GARBAGE, ETC.

Drainage.—Few of the sanitary reports from our military posts enter into details of the drainage; and as a matter of fact there is at many of them little to be said on the subject, as the inclination of the surface in some direction suffices to carry off the rainfall, or the superficial beds of sand and gravel are so deep that surface water does not lie and the level of the subsoil water is too low to be regarded as an insanitary factor. At some posts the natural drainage is aided by shallow ditches, covered or uncovered, leading into neighboring ravines. Where such ditches exist kitchen sinks, bathrooms, and urinals are generally connected with them in the absence of a systematic sewerage system for the proper disposal of these liquid wastes. At many of the Northern posts the frosts of winter seal the ground and put a stop to all surface and subsoil drainage. Heavy snowfalls cover up garbage and other refuse that may be thrown out and prevent any systematic policing of the surface for four or five months. When the snows melt in the mild weather of returning spring the accumulated foulness is brought to view and the post, if inspected at this particular time, would not show to advantage. The usual remedy in this case is to turn out the whole strength of the garrison for thorough general police from day to day until this spring cleaning has been effected.

The following report by Capt. Paul Clendenin, Fort Brady, Mich., gives a view of a Northern military post during the period of spring thaws:

> The drainage is by means of underground sewers and is efficient. At present the rapidly melting snow is causing the collection in places of a great deal of surface water, but this is being remedied as far as possible by trenches cut through the snow banks by the police parties to carry the water off. Many of the collections of water are due to depressions in the surface as well as by being shut in by the unmelted snow. A great deal of the ground has been graded artificially, and this new earth has settled unequally. This can easily be corrected when the snow disappears. The snow banks along the sidewalks are still shoulder high in places, and occasionally these banks act as dams, though for the most part the water is passing off under the snow. In a few of the cellars a little water has appeared, coming in through the walls. The ash pits of the barracks and the hospital, being lower than the tile drains around the foundation walls, require bailing several times daily whenever there is thawing weather. The strong winds for the past few days have done much to rot the snow, as it is termed in this country. Dry winds, with a temperature a trifle above freezing, honeycomb the snow banks and cause them to sink very rapidly. The consequent saturation of the atmosphere with moisture renders this a most fertile season of the year for colds, neuralgia, and rheumatism. The colds resemble those seen in a malarial district and yield, if taken in time, to moderate doses of quinine. There is the general lassitude, soreness all over, injected eyes and stuffiness of the head, that the laity are so fond of calling "grippe," accompanied usually with some febrile reaction. In my opinion this condition of the system is due to breathing air saturated with moisture that has carried off mechanically decomposing organic matter. During the winter in this country there is no drainage save the house drainage into sewers buried deeply in the ground. Everything on or near the surface remains frozen up for at least five months of the year. All filth thrown out of the houses and the droppings of animals in the streets and all the impurities washed out of the atmosphere by the almost daily fall of snow are buried by the snow more or less mingled with it. In this condition the impurities are practically harmless during the winter months, but in spring this accumulation is exposed as the snow melts; some of it runs off in solution with the surface water and some is carried off mechanically with the evaporating moisture, but the greater part of the remainder putrifies as the weather becomes warmer, unless removed by scavengers. The drainage of the new post is so excellent and the police has been so efficient that there will be but a small residue to be removed when the snow has disappeared. At the old post it will be necessary to remove the snow and ice near the buildings by shovels and carts. It is all impregnated with refuse matter, and the buildings shade the snow in their immediate vicinity so effectually that, except on

the south side, it is late in melting. This is especially true where it has drifted against the buildings in the narrow spaces between the barracks and mess rooms and bathrooms and in rear of the old hospital and the officers' quarters.

During the past year special notes were made of the drainage of only four posts. At Fort Assinniboine exception was taken to the drainage in the immediate vicinity of the barracks and underdraining into a cesspool was recommended, but this was overruled by the medical director, who considered that the object could be better accomplished by grading and surface drains. At Fort Du Chesne the drainage from the surface is upheld in the subsoil by an impervious stratum at the depth of 10 or 15 feet, so that the site of the post is practically a huge cesspool, which receives the leachings from a vast number of privy pits disused and in use. This cesspool is said to have only two outflows, one on the bank of the river near the hospital and the other in the cellar of the subsistence storehouse. Capt. S. Q. Robinson's report of this singular condition of subsoil drainage is worded as follows:

> In a previous report attention was invited to the fact that the post is underlaid to a depth of 10 or 15 feet by a stratum impervious to water, and that the evils of such occupancy would sooner or later be felt. The increased vigilance rendered necessary by the possibility of cholera leads me to recur to this subject. Tons and tons of stable manure have been carted on to the parade and the road surrounding. Outside of the buildings which inclose this area is a cordon of privy vaults, 33 in number. Liquids drain rapidly away from these. The stable manure is leached to some extent by the infrequent rains, and very thoroughly by the free supply of water from the numerous irrigating ditches, the passage downward of the resulting solution being arrested at the depth above stated. This gigantic cesspool at present has two outlets, one on the bluff bank of the river near the hospital, the other in the commissary cellar. At this season, when the ditches are frozen up, the cellar does not have to be pumped out very often, but in the irrigating season, *i. e.*, when water will run, the floor is frequently covered to a depth of 3 or 4 inches. Without irrigation and manuring the post would become the desert that it was originally. Regarding these as necessary evils, the problem is to limit their power for harm. I respectfully recommend that, if the cellar can not be kept water-free by cementing the floor and walls, its use be discontinued. An inconvenient, although otherwise unobjectionable, site can be found near the vegetable cellar. A year or more ago, when the spring near the hospital was first noticed, it was thought that its source was in the privy vault. This was thoroughly disinfected and closed, an earth closet being substituted therefor without affecting the flow. When the ditches are running full the leachings have other points of escape. They then bubble up under the little foot-bridge at the head of the branch that runs between the bench on which the post proper is located and the "interval" where the married enlisted men have put up their habitations. They appear also in an abandoned cellar 50 yards above the hospital, and probably at numerous undiscovered points in the channel of the branch, which closely follows the line where the bench breaks off. The lower three-fourths of this branch is slack water, except in floods. Last fall it became so offensive that it had to be flushed. Neither stagnancy nor surface drainage sufficiently accounts for its condition, leaving the inference that it is fouled through subterranean channels. It will require attention in June at the latest. The construction of a weir dam to divert part of the water of the larger branch at its head through it is respectfully suggested as a remedy. Sergeant Johnson's quarters are the nearest to this branch. The front door is 10 or 15 feet distant from the edge. He uses the water only for gardening. In this house a boy of 12 is now convalescing after being six weeks ill with continued fever. These quarters are the best of their kind and are neatly kept, although they have been banked up with stable manure for warmth. The circumstances certainly do not justify a positive statement that this was a case of typhoid caused by foul water, but the facts may be properly presented without discussing their relations to each other.

At Fort Barrancas a marsh 600 by 200 yards, situated between the hospital and the water line, is regarded by the post surgeon as the cause of malarial diseases, which affect particularly the inmates of the hospital. His recommendation to tile-drain this piece of ground into a well in its lower part and pump the water by windmill into the main sewer was not approved, as the insalubrity of the marsh was not clearly defined in the medical history of the post, and the practicability of draining it was doubted, liable as it is to tidal inflow. At Fort Ontario certain low grounds about 300 yards east of the hospital became converted in April into a pond 200 feet in area and 2 to 3 feet deep, in which the drainage of Schuyler street, from Fourth to Ninth streets, accumulated, and which became a depository for dead animals and other organic refuse. Provision had been made to prevent accumulation of water at this point by a culvert, but this had become obstructed. The attention of the local board of health was called to this unsanitary state of affairs and prompt remedial measures were instituted.

Sewerage.—As regards the disposal of excreta and liquid wastes our posts may be divided into classes somewhat as follows: A few still in the primitive sanitary condition of privy pit conservancy, with no provision for liquids but the absorbing soil of their sites; a few in which earth closets have been substituted for the pit; a few in which, with either the pit or closet, some effort is made to carry off liquid wastes; a few in which the drains for these liquid wastes form the rudiment of a sewerage system by having connected with them the outflows from certain lately introduced water-closets; and, lastly, the majority now provided with thoughtfully planned, carefully built, and thoroughly efficient systems of sewerage.

Privy pits continued in existence during the year at Forts Du Chesne, Keogh, Meade, and Sidney, Camp Pilot Butte, and Benicia Barracks. Reference is made above (page 106) to the pits at Fort Du Chesne. The medical director in his last report on the condition of Fort Keogh included a system of sewerage, with water-closets and baths, as one of the sanitary requirements of this post if its continuance is intended. Privy pits are still in use at the large and important post of Fort Meade. A recommendation to substitute the pail system for the pits at Fort Sidney was disapproved on account of the probable speedy abandonment of that station. The following from a report by Capt. George McCreary gives a view of the conditions of Fort Sidney:

> I have the honor to report that the sanitary condition of the post is good with the exception of the method of disposal of the night soil. For this purpose pits are used, and behind each set of barracks there are three or more rows of depressions in the soil marking ancient sites of privy vaults. When the vault becomes filled with fecal matter the building is moved over a new pit and the old one covered with earth. This custom has existed so long that the available space for the pits has become exhausted, and ground that has been appropriated for other purposes has been encroached upon. The houses at present in use are old and reeking with the emanations of countless pits. The best-directed efforts of the troops can only keep them surface-clean. The absence of any system of sewerage makes the water disposal of the night soil impossible, but the earth-closet system is available. I earnestly recommend that this system be at once inaugurated, and that the old houses be destroyed and replaced by brick houses with concrete floors. At the same time the old pits should be reopened and their contents removed. The excavations should then be thoroughly limed and filled with clean earth. This should be done at once, before the hot weather sets in.

The pits at Camp Pilot Butte, with a dry ravine for garbage, the parade ground covered with cinders, the surrounding country barren, and the only green spots in sight small patches of garden in front of the officers' quarters, carefully nursed on soil imported from a distance, suggest a survival in Wyoming of the conditions of some of the Arizona posts of twenty-five years ago, only that Pilot Butte enjoys a plentiful supply of water and ice, which those sun-dried desert stations did not possess. The privy pits at Benicia Barracks are associated with some more modern improvements. Kitchen and other waste waters are led from each building into two 4-inch mains which open outside the reservation on lower ground, one on the surface, the other into a cesspool. These carry also the excreta from the officers' quarters. Estimates for sewers for this post have been considered on several occasions, but favorable action has been delayed on the ground, so it is understood, that it would be best to have one general system, especially as to outfall, for the arsenal and post, and that it would be well to wait for a decision as to the location of the gun foundry for the Pacific coast which, if in favor of Benicia, would cause some modification of the sewerage plan.

Dry-earth closets were substituted for privy pits during the year at Fort Buford and Boisé Barracks.

Besides those already mentioned the following posts are yet without systematic sewerage: Camp at Eagle Pass, Key West, Omaha, and Mount Vernon Barracks, and Forts Assinniboine, Bayard, Clark, Custer, Hancock, Marcy, McIntosh, McKinney, Missoula, Pembina, Ringgold, Sherman, Sill, Stanton, Sully, Walla Walla, Washakie, and Yates. At a number of these some provision is made, as at Fort Sully, to carry off bath and barrack room waste water through covered drains into cesspools or ravines. At others, as at Fort Yates, the waste water runs into the subsoil or collects in frozen pools on the surface. At Omaha Barracks drains from officers' quarters open on the surface of the parade ground 40 to 60 paces in front of the quarters. Remedial measures for this condition were suggested, but no action was taken on the recommendation, in view of the speedy abandonment of the barracks as a military station. At Fort Bayard waste water is removed from the officers' quarters and the hospital by a 6-inch tile sewer, with 4-inch connections, all at right angles, with running traps. The rain leaders were originally connected with this drain, and were arranged as ventilators for it, but a prevalence of throat troubles in 1891 led to their disconnection. Waste water from the barracks is piped about 30 feet into an open ditch, which receives the output of the 6-inch drain and spreads the whole upon the post garden.

The dry-earth system is used at most of these posts for the disposal of excreta. This method, which answers excellently for small civil communities, is open to several objections as carried out in practice at our military posts. For its efficient accomplishment there should be stored for use a sufficiency of dry pulverized earth, which should be properly distributed over the excreta; the troughs should not be permitted to become so full as to be unwieldy, and each post should be provided with two sets, one to undergo cleaning and deodorizing while the other is in use. If the troughs were mounted on low trucks much of the heavy handling would be avoided. The practical objections to the system are to be found in the want of dry earth, its negligent use, and the labor of handling the troughs. At some posts, as at Walla Walla, where the work of scavengering is done by civilians under contract, the system answers well. The following by Capt. James E. Pilcher, shows the methods in use at Fort Ringgold.

The sewerage system.—The term "sewerage system," for the purpose of this report, is assumed to include all appliances for the removal of solid and liquid waste from the post. The rainfall is so small that the rain is quickly absorbed to a large degree. What is not taken up by the soil and its products is carried off all too quickly by natural surface drainage. In considering the question of sewerage in this locality, then, the disposal of adventitious superficial fluid waste is a silent factor not to be considered. But few of the roofs are provided with gutters, and there are, consequently, but few rain leaders; these empty upon the surface.

There remain, then, for disposal the solid waste—excrement and solid refuse—and he liquid waste from the urinals, kitchens, bath rooms, and laundries. The burial tem is in use for the former, and a system of water carriage for the latter.

The earth closet method is employed for the disposal of night soil. Each set of quarters is provided with one or two earth closets; the hospital has two, and the large sink for enlisted men contains twelve. Under each seat stands a galvanized iron pan 18 by 24 by 16 inches, into which the dejections fall. Boxes of dry earth, with scoops, are provided in the closets and the excrement is kept covered and practically inodorous. No urine separator is employed, sufficient earth being used to take up the fluid. Observing that the urinary excretion of the men was thrown forward against the front of the seat instead of into the pan, the post surgeon in February, 1893, secured the introduction under each aperture of tin urinary deflectors to turn the urine back into the pans. The pans are washed, deodorized, and disinfected at frequent intervals as required. A civilian scavenger removes their contents nightly and carts them to a pit about a mile from the post, where he dumps them. When one pit is filled a new one is prepared.

Solid refuse from the kitchen is removed with the ashes by the labor of prisoners to a point near the dump for night soil.

Stable refuse is carried to a convenient point half a mile from the post. The piles of manure are allowed to dry here until they are readily inflammable, when they are ignited and reduced to ashes.

Liquid refuse is carried off by a system of pipes opening into the Rio Grande River at a point just above low-water mark, and 200 yards below the post. The sewers thus formed are composed of cylindrical salt-glazed vitrified earthenware tiles, with socket and spigot ends. All connections are made by angular junctions to facilitate the passage of the sewage. The joints are tightly calked with oakum and sealed with Portland cement.

The system consists of a main sewer composed of 6-inch tiles, and two principal and several minor branches composed of 4-inch tiles. The longer branch begins at the hospital and passes in front of the barracks which front on the parade ground, receiving branches from the other barracks and from the enlisted men's sink, and ends at a manhole in the rear of the guardhouse, where it is joined by a branch from the married soldiers' quarters. The second principal branch begins at a urinal in the rear of the quartermaster's storehouse, whence it goes to join the pipe running in the rear of the officers' quarters and emptying into the main sewer at a manhole situated on a line with the rear of the officers' quarters. A third branch begins at the quarters of the quartermaster-sergeant, and runs thence parallel with the preceding branch, connecting with the other non commissioned officers' quarters and the commissary storehouse. These branches contain 6,197 feet of 4-inch pipe.

The main sewer runs at an angle of 20° to the officers' quarters, from the manhole in the rear of the guardhouse to a manhole near the rear of the hay corral, whence it passes into the river in a direct line. The main sewer consists of 1,594 feet of 6-inch pipe.

The fall of the sewer is 6 inches to each 50 feet.

There are five manholes in the system, each 3 by 4 feet, and of a depth ranging according to the depth of the sewer at that point. They are located (1) at a point halfway between the hospital and the barracks, (2) at the southeast end of the barracks; (3) in the rear of the guardhouse; (4) 50 yards beyond the southeast end of the officers' line, and (5) near the eastern corner of the hay corral. They are simply rectangular pits with brick walls faced with Portland cement, with which they are also floored. The sewer pipes open into them at the level of the floor. They are covered with heavy iron gratings, which permit them to act as ventilators, excepting the second one, which is covered with a plank platform.

The entire system of pipes is flushed weekly by plugging the ingress pipes in each manhole in succession, and playing into the manhole with a 2-inch hose. The flushing thus obtained is very inefficient and the post surgeon has recommended the introduction into each manhole of a tumbler-flushing tank with automatic action. The arrangement is simple and inexpensive. The tank is so balanced that, when filled, it will automatically empty itself into the sewer, returning to its original position to be filled again. By varying the amount of the flow from the water pipe, the time required for filling the tank can be regulated to occur at any interval desired, each discharge throwing thirty gallons of water into the manhole, completely filling and scouring out the pipe emerging from it.

At the hospital, besides the kitchen sinks and the bathrooms, one urinal empties into the sewer. At each set of barracks it receives the waste from the kitchen sinks and bathrooms. At the soldiers' water-closet it receives the contents of six urinals. At the guardhouse it receives the waste from the bathroom, and later, the guardhouse urinal. Each set of officers' quarters discharges into the sewer three pipes, one from the bathroom, one from the kitchen sink, and one from a urinal in the extreme rear. At the noncommissioned staff officers' quarters the sewer receives the waste from the kitchen sinks and bathrooms.

The urinals in the closets of the officers, enlisted men, and the hospital are the Demarest patent, porcelain flat back, lipped urinals with non automatic flushers, In a few places there remain the old Mott flat-back, lipped, enameled iron urinals. All connections with the sewer are made by means of 1½-inch pipes intercepted by simple S traps. There are no grease traps.

The waste of the engine house is discharged, not into the general sewerage system but through its own pipes into the river.

The cost of the material and labor required for the construction of the system of fluid sewerage was approximately $3,275.

By the combined methods described all the waste products of the post are promptly, inoffensively, and hygienically removed. The system works smoothly and satisfactorily, and may be said to be an unquestionable success.

The subject of sewerage at Forts Clark and Washakie is under consideration. A contour map of the former post has been made by the engineer officer of the department, and the Quartermaster's Department is engaged in planning a system of sewers. Meanwhile the open drains are kept in good condition by flushing and the occasional use of sulphate of iron. At Fort Washakie an adequate provision for the disposal of sewage has been urged with more or less earnestness for many years. At the present time, this is regarded as the greatest sanitary need of the garrison. The Major-General Commanding is of the opinion that the troops can not be withdrawn from this place for many years to come, and that the post should be put into condition for indefinite occupation. It is hoped, therefore, that favorable action will be taken in this case. In March the post surgeon of Fort McIntosh urged the introduction of a system of sewerage to be disposed of by intermittent filtration to purify it in part before turning it into the river. In the future, when Laredo has a sewerage system, it would be well to sewer this post connecting with the city outfall, but it is unlikely that the sewage could be run into the river now above the intake of the city's water supply. Estimates are understood to have been forwarded by the post quartermaster. Capt. B. D. Taylor has made several efforts to have favorable consideration given to the need for sewerage at Fort Sill. This post is built in the form of a hollow square on a square plateau 50 to 80 feet high, with Medicine Bluff Creek at its base on the north. The officers' quarters on this side and two sets on the east have a sewer which enters the creek below the post. The other buildings on the east, those on the south, and the barracks and hospital on the west, have sewers which run into a main at the southwest angle, having its outfall in a cesspool in a swampy hollow. The main in the last 200 yards of its course is an open drain. There are besides from certain houses four other drains which issue on the surface. All this system is for waste water; but the 4-inch drain tiles are too small; they are badly cemented and have no traps nor manholes. Moreover, the fall is insufficient, only 4 inches in 100 feet. As a result of attempts to flush the water backs out into some one's yard or the pipes burst and there is a constant necessity for digging up and repairing. Capt. Taylor's recommendation for a new sewer system was approved last year by the Surgeon-General. On inquiry at the present time it is found that the subject is under consideration in the office of the Quartermaster-General awaiting a decision of certain points which will settle the question of improvements as between Fort Sill and Fort Reno.

Attention was called to defects or insufficiency of the sewerage system by the medical officers of a few posts. Among the faults noted by Maj. T. E. Wilcox in the new system at Fort Huachuca were imperfect cementing of joints, sections not strictly on grade, and small pipe inserted between joints of larger size. Extensive repairs were made to this system, the grades corrected, and new pipes laid. As the reports from Fort Wingate characterized the sewers as defective, a letter was sent to the post surgeon calling for a report in full on the subject, with specific recommendations for improvement where such in his opinion were called for. Meanwhile it appears that instructions had been sent from the office of the Quartermaster-General to have plans and estimates prepared, giving careful consideration to the latest information relating to the condition of the sewerage system. These were forwarded, and having been approved the funds necessary to effect the improvements were allotted. At Angel Island a line of earthenware sewer pipe runs along each side of the parade ground and, uniting at the foot of the slope, is continued by an iron pipe into the bay below low-water mark. These carry off rain and all wastes, including discharges from the water-closets of the post. Ventilation is by the rain leaders, which are untrapped at their junction with the sewers. The men's privy is a deep vault or cesspool, which can not be kept free from odor by flushing. The department commander directed the commanding officer of the post to present an estimate for what would be necessary to remedy the defects of the system. The following is from the report of Capt. W. R. Hall from this post:

> The drainage during the rainy season is somewhat defective. There are some open cement drains, but not nearly enough, and more attention should be paid to running off the water from numerous springs situated near the stable and between the hospital and officers' quarters. A ditch should be constructed to drain the two upper sets of barracks. The sewerage system, a most faulty one, may be described as follows: There is a double line of earthenware pipes, one beginning back of the bakehouse and the other in the neighborhood of the stable, both of these points being toward the summit of the ascent upon which the post is situated. The sewers, one running on each side of the parade ground, unite at the foot of the hill to empty, by means of an iron pipe, into the bay below low-water line. They carry off all sewage from water-closets and kitchen sinks, also waste water of every description, including the rain water from the roofs. The only ventilation of these sewer pipes, as far as I have been able to discover, is through the rain-water pipes, which empty directly into the main sewer without any trapping, and of course any accumulation of gases escapes from the open ends of these pipes, or, in other words, the sewers are directly ventilated onto the roofs of the dwellings. Undesirable as this may seem it has in reality proved a safeguard, for without these outlets any unusual pressure in the sewers would force gas through the badly trapped or untrapped house drains into the various buildings. In this connection attention is invited to the men's privy. This is practically a large cesspool. There is a deep vault into which sewerage pipes empty, and out of which runs a drainpipe into the main sewer. Into this vault, more or less filled with water, are discharged the excrement and urine of nearly 300 soldiers. The air in the building is always contaminated by the foul gases emanating from this unventilated cesspool, and at times the odor of it is perceptible from the road. Attempts are made to clean this vault by flushing it with water several times a day. The accuracy of the foregoing statements may seem incompatible with the acknowledged good health of the command, but this apparent inconsistency is readily explained by the superb climate of Angel Island, which encourages a life out of doors and tends to keep open both doors and windows, so that the fresh air blows freely through the dwellings.

A new sewerage system was provided for Fort Barrancas during the year. The details of the system are thus reported by Lieut. R. S. Woodson, assistant surgeon on duty at that post:

> The sewer system is composed of [illegible] 8 inch cylindrical vitrified glazed earthenware pipes, with hub and spigot joints closed with mortar cement. The pipes are laid, hubs up, in straight trenches 3 feet deep in true alignment. All changes in direction are effected by means of large manholes built of brick, with tight-fitting ventilated iron covers. Three manholes are placed near the three single hydrant nozzles mentioned above for flushing purposes, one in rear of hospital, one in rear of noncommissioned staff quarters, and one in rear of officers' quarters No. 13. The flushing is accomplished by means of a 4-inch rubber hose connected with the fire hydrants. Besides these three are numerous manholes placed at suitable intervals for purposes of inspection. The lines are so run as to produce the greatest possible fall The three 6-inch sewer mains converge to a common manhole (6 feet deep) sit

at the lowest level obtainable on the plateau upon which the post is built. The gradient of these mains is about 1–100. From this point commences the 8-inch main, which for the first 100 yards has a gradient of 1–20, and from there on to the outlet below the water line, a distance of 1,300 feet, it has a gradient of only 1–200. This deficiency in grade is overcome by the excellent arrangements for flushing and the carefulness with which the pipes were laid. The outlet of the main from the last manhole is composed of 8-inch iron pipe, and extends out into the water, supported upon iron cylindrical piles a distance of 30 feet.

The plumbing and fixtures in officers' quarters No. 7 to 17, inclusive, are as follows: Each bathroom contains water-closet, wash basin, and bath tub. These rooms are built as an addition to the main building with three exceptions, and are consequently well lighted and ventilated and to some extent isolated. The water-closet is a washout hopper, constructed of stoneware, with a basin so shaped that a small quantity of water remains in it to receive the excreta, which are flushed out over the edge of the basin into a siphon trap below by means of a strong, straight current as well as a rim flush. The closet is provided with a siphon action, water-waste-preventing cistern, which discharges several gallons of water into the hopper by means of a 1¼-inch lead service pipe. The siphon trap empties into a 4-inch soil pipe of drawn lead, flanged over the floor entrance. The siphon trap is ventilated from its sewer end by connection into the 2-inch ventilating pipe. The lead soil pipe (3 feet long) is soldered to a small section of iron pipe, which in turn empties into the 4-inch iron soil pipe by means of a V joint calked with hemp and lead. This 4-inch iron pipe continues down and connects with a 6-inch house drain of vitrified glazed pipe without a disconnecting trap and fresh-air inlet. The 4-inch pipe continues the same size through the roof and above to the height of 4 feet. On the way up it receives the 2-inch ventilation pipe by means of a V joint. The bath tubs are of wood lined with tin; they are supplied with hot and cold water by ¾-inch lead supply pipes. The waste pipe is 1¼-inch lead, with a siphon trap ventilated by a connection with the ventilation pipe and with a screw-cap opening for cleaning. An overflow pipe empties into the waste pipe below the trap. The wash basins are plumbed in a similar manner. The old dry-earth closets in rear of the officers' quarters have been converted into servants' closets. They are supplied with a straight backed short hopper with rim flush and siphon traps. The hopper is flushed by a water-waste-preventing siphon-acting cistern. The plumbing of this closet is similar to that of the officers' closets, except that the siphon traps are not ventilated, nor is this necessary, for the closet is isolated from the main building.

The kitchens of the officers' quarters are each furnished with a sink of galvanized iron and supplied with hot and cold water by ¾-inch lead supply pipes. The waste pipe, 1¼-inch lead, of this sink contains a siphon trap with a screw-cap opening beneath for cleansing; it empties into a 2-inch cast-iron soil pipe by means of a V joint, which in turn empties into the 6-inch house drain by means of a T joint. This 2-inch soil pipe continues up 3 feet above the roof. The hot water is obtained by running the water through a range and then into a boiler, from which it is supplied to the house by ¾-inch lead service pipe. A drip cock is placed at the lowest level under each house to let the water out of the lead pipes after it has been turned off to prevent freezing.

The kitchen sinks, bath tubs and wash basins of the barracks are plumbed in exactly the same manner as those in the officers' quarters. There are two sinks in each kitchen, six wash basins in each of the three bathrooms, and three bath tubs in each of two bathrooms. Each fixture has its own siphon trap, which is ventilated, and an overflow pipe. They are supplied with hot and cold water. The lavatories are composed of colored marble with stoneware basins. The bath tubs are of iron.

The guardhouse has a bathroom with bath tub, wash basin, and washout hopper closet. It is plumbed in a similar manner to that described in connection with the officers' quarters.

The old dry-earth closet has been moved forward to a position just in rear of the barrack kitchens. It has been enlarged to such a capacity as to contain twenty partitioned closets, each supplied with a short hopper. It has eight slate stalled urinals. The bowls of the hoppers are in separated pieces from the siphon trap, to which they are connected by a flange joint; the bowl is cone-shaped. The water seal does not rise to any extent in the bowl. It is supplied with a rim flush connected by a 1¼-inch lead pipe with a waste-preventing siphon-acting cistern above operated by a cord attached to a lever. Each hopper is covered by a rough plank with a hole cut in it to fit over the bowl.

The urinals are of stoneware set in slate stalls and floors, eight in number; they are flushed by means of four automatic flush tanks of the same size as the cisterns over the hoppers. The cisterns and tanks are supplied by a ¾-inch iron gas pipe connected with the water main and giving off lead branch pipes to each cistern.

Underneath the floor on each side of the building runs a 4-inch cast-iron soil pipe into which empties the 4-inch drawn-lead soil pipe of the hoppers by means of a wiped and gasket joint; also the soil pipe from the urinals.

At each corner of the building is placed an upright 4-inch cast-iron soil pipe running up through the roof. These are connected with the two horizontal soil pipes under the floor. The two horizontal pipes are connected across the building, and from the point of intersection a 4-inch cast-iron pipe leads off to the 6-inch sewer in front. The urinals are emptied by 1¼-inch lead pipe into a common soil pipe 4-inch cast iron situated behind the fourth and fifth stall, each four being supplied with a ventilating siphon trap on either side of the upright soil pipe. Each water-closet trap is ventilated into a 2-inch cast-iron ventilating pipe, running around the walls of the building just above the hoppers, connection being made with T joints.

The noncommissioned officers' quarters have their bathrooms built on the rear porch. They are furnished with a straight back, short hopper, with rim flush, similar to servants' closets. They are not supplied with hot water; with these exceptions the plumbing is exactly similar to that of the officers' quarters.

The hospital and steward's quarters have not been plumbed, in view of the fact that a new hospital is expected to be built later on.

The whole system above ground was carefully tested by the post surgeon with oil of peppermint and hot water, and all joints were found air-tight.

The water from the pipes is loaded with iron rust, which becomes thickly deposited on all basins, bath tubs, hoppers and urinals. This would indicate a careless coating of coal-tar composition. The water has an odor of tar, and is slightly contaminated with grease from the packing. This, it is thought, will disappear in course of time. There seems to be a multiplication of pipes and fixtures beneath the barrack lavatories, but if an error it is on the side of safety.

All plumbing has been done in a scientific and workmanlike manner by competent plumbers from Cincinnati, Ohio.

The carpenter work, done by a local workman, is bad. Large, irregular holes have been left in the floors and ceilings of houses; the bath tubs have been boxed in with pieces of dry-goods boxes, etc.

The men's closet is the only bad pattern of the whole work, the hoppers (twenty in number) being cone-shaped with a rim flush, the water seal extending no further than the apex of the cone; it has, though short, all the fault of the old-fashioned long hopper. Excreta deposited on the sides are not swept away by the weak rim flush. When it is remembered that 180 men have to use this closet it will easily be seen that without due care it will develop into a nuisance. It has been inspected four times, and each time all the hoppers were found in a filthy condition, not due to carelessness in flushing. A long trough closet, with separate compartments and an automatic flush tank, would have been much more suitable. With this exception the work is considered excellent in every detail, and will greatly increase the healthfulness of the post.

Improvements to the sewerage system were planned at Fort Grant and Madison Barracks. According to the medical officer on duty at the former post changes are now in progress which, when completed in accordance with the plans, will be serviceable and effective. At the latter station a new sewer was laid in rear of the officers' quarters; bath tubs and water-closets properly trapped and vented were put into the houses, and means provided for flushing thoroughly the water-closets and urinals of the barracks. During the year the sewers of Fort Niagara were extended to an outfall below the source of the water supply. A new sewerage system at Fort Niobrara was completed in November, but a lack of water available to flush it prevented any benefit from its use. The springs are amply sufficient and the pumps fully adequate for the work, but the storage tanks and mains are too small, the latter consisting of 1½ and 3-inch pipes indiscriminately continuous. These defects of the water system are under consideration by the Quartermaster's Department.

Faulty plumbing was reported from Jefferson Barracks and Alcatraz. In some of the buildings at the recruiting depot, particularly the mess hall, there are defects in plan, materials, construction and repair. The ventilation of this system is into the kitchen, and the rain leaders open directly into the sewers. An allotment was made by the Quartermaster-General to remedy these defects. Clogging, leaks, siphonage, and want of traps and vents are noted in the report of the inspection of the sewerage of Alcatraz Island by Lieut. Ogden Rafferty, assistant surgeon, U. S. Army:

The island has three sewers. All are of the combined system taking in a portion of the drainage; in the ditch at the northeastern end of the "citadel" are two flushing barrels placed over the ends of two 8-inch pipes; these pipes run down the center of the ditch below ground. One passes under the eastern tower, then down the center of the ditch to near the south corner of the ditch, and then passes out to a Y-shaped branch of the brick sewer which runs nearly south to the sea. The pipe from the other barrel, after running around the northwestern face of the building, passes under the west tower and crosses the ditch three times on itself at right angles, and joins the head of the brick sewer at the southwestern end of the building (near the drawbridge to the old main hallway). This sewer, of oval shape, about 3 feet by 2 feet, runs along the southwestern wall of the ditch and beyond, till it is joined by the branch from the other pipe; then it runs rapidly down the hill in a southern direction under the road, out on the other side, and again disappears under the road at the corner of the ordnance storehouse. Here it disappears, running under the earthworks and coming out at the water's edge, some 60 yards beyond where, at the edge of the rock, it drops 60 feet in a mason-work column to the water's edge.

The hospital steward's quarters and the noncommissioned staff quarters and bakery are connected with a combined sewer that begins at a water-closet a few feet from the bakery, runs 15 yards northeast to the road bank, drops down [illegible] feet, and crosses the road to the corner of the noncommissioned staff row, then runs directly back of this line in a direction northwest for its entire length, curves around the far corner, crosses the road, and, before emerging through the stone wall to dip under the hospital, is joined by a surface drain (that drains the front and rear of the noncommissioned staff row of quarters); increasing in size at this point from a 4-inch stone to a 6-inch stone pipe, it continues in a northeasterly direction under the hospital. The 4-inch stone pipe from the hospital steward's quarters, after passing diagonally under the whole length of the hospital, and receiving the various branch pipes from it, connects with the sewer in a mason-work box, from the lower end of which emerges a 6-inch stone pipe that runs 50 feet down the steep hill and empties into an open mason's trap; this trap also receives the drainage of the hill and slope near the prison, and the recently laid 2-inch iron soil pipe from the blacksmith shop and plumbers' quarters; from this point a brick sewer has been built diagonally across the road and underneath the prison dining room, emptying into the bay, 15 feet above the water, through a drilled hole in the rock.

At the adjutant's office begins a sewer which also receives the roof water of the building as it passes; it runs back of and near the foundation walls of the officers' row of quarters to the northwest corner of the commanding officer's quarters; at this point it is joined by an elbow with the drain pipe from the third set of quarters on that line; from this point it drops nearly vertically for 32 feet to the roadway beneath, passes beneath this and continues under ground till it emerges on the water's brink at a point near high-water mark. At the point where the sewer begins its vertical descent, a small break recently occurred at its junction with the drain from the third set of quarters. This was due to a small landslide, caused by the rains; at the present time it is undergoing repairs. This sewer, with all its connections in the houses contributing, is of modern structure and has given satisfaction, with the exception of the water-closet beneath the adjutant's office, which has a ventilating pipe stopping at the ground level, and the exception mentioned in describing the buildings.

The light-house sewer or drain begins, without a ventilating pipe, at a closet in the yard, receives the water from the kitchen sink, which, by the way, passes through the top of the cistern connected with the light-house, joins the above-mentioned drain, and curves down and around the hill in a southern direction and joins the large sewer from the "citadel" near the ordnance storehouse, by a connection at the top, so that the sewerage drops vertically into the large sewer.

The "citadel" connections with the sewer are in the main good, but are faulty in arrangement; the fixtures are all of modern design, with the exception of the pan closet in the ditch at the rear of the middle set of quarters; in all the bathrooms the bath tubs and stationary basins join directly with their small-caliber lead pipes to the larger iron water-closet soil pipe. Frequently when these bowls are freely flushed they siphon off the seal from the stationary washbowl and washtub, leaving by this means an outlet for sewer air into the bathrooms. Recommendation has been made and concurred in by the commanding officer, to have these stationary bowls and bath tubs disconnected from their direct connection with the sewer and to connect with it through means of the open hoppers that have already been placed outside each set of quarters, and which at present are only used, with one exception, to carry off the water from the kitchen sinks. The soil pipes, with the exception of the for the bathrooms, built over the ditch, all end at the level of the upper windows, making it possible for sewer air to drift into the second-story windows when the upper sash is lowered. These should be carried above the roof, as recommended in July, 1892.

The sewer starting at the bakery has a pan closet at its beginning which does not maintain its seal. At the point where the sewer bends over the rock to reach the rear of the noncommissioned staff row, its construction is very bad; it frequently clogs and cracks at the joints, leaking down the side of the rock and emitting foul odors. At the noncommissioned staff row the closets are of the long, straight, hopper style, and are placed in small houses on the porches between and at the ends of the buildings. Some of these closets are used as storerooms. The kitchen pipes empty straight into the sewer by small pipes, as do also the pipes from the bath tubs; some of these fixtures are occasionally syphoned. In September, 1892, the "peppermint test" was applied to this row of quarters; every fixture was placed in its most favorable condition. It was then found that every fixture in the central house was defective, and that the ventilating pipes were carried but a short distance from the ground instead of above the roof in all the houses. This section of the sewer for the past seven months has frequently clogged, and the sewer water coming to the surface has followed the surface drain around the end of the row, occasionally overflowing and soaking through the roadway, to come out through the stone wall at the ground floor of the hospital, which is 15 feet below the level of the roadbed. Recommendation for taking up of this section of the sewer and overhauling every one of its connections has been made and approved of, but as yet no money has been made available for its accomplishment. The stone pipe drain from the hospital teward's quarters, after passing diagonally under the full length of the hospital, nd receiving each of its connections, empties into the mason's box under the floor of the new portion of the hospital. This is not a desirable arrangement, but could hardly be averted without considerable expense. From the free ventilation beneath he building, which is high enough to admit of inspection, no evil results have been made apparent.

The water-closet at the men's barracks is a house situated at the edge of the wall ear the kitchen and above the commissary building. It contains two urinals and a rough of automatic flushing design, over which are accommodating holes for six. The 6-inch soil pipe, within a yard of its origin, turns twice at right angles to get ver the wall. It then turns down the wall and runs by a steep decline to the wharf, eneath which it empties. This pipe has been frequently clogged, and at the present time has been closed for two months. A recommendation was made to move this uilding back over the wall far enough to admit of the pipe running directly to the harf without any sharp bends. This was not, however, concurred in by the commanding officer, and a scheme is now under consideration to erect a privy over the ater to take the place of the old one of similar type under the carpenter's shop, which is now all the men have.

Sewage at a few posts, as Forts Bayard, Bidwell, Stanton, and Logan, s utilized for purposes of irrigation. The system at Fort Stanton, which carries off waste water only, consists of earthenware pipes. The main, 12 inches in diameter, discharges into two settling tanks 9 feet in iameter and 10 feet deep, 600 yards below the post. From these the quid is siphoned off and in part used to irrigate the company gardens. he pipes are unevenly laid, and hence liable to choking and foul odors. ectangular instead of Y branches are used, and flushing is imperfect, om defective arrangements and want of water.

The surface drainage at this post is very good and is accomplished by narrow tches (acequias) of a depth from 1 to 2 feet, through which, at all seasons of the ar when possible (winter and the dry season excepted), water from the Rio Bonito conducted. The fall being considerable, 1 foot to 100 yards, no stagnation occurs. The sewerage system as at present constructed is incomplete, faulty and insufficient. is of the "water carriage" variety, and aims to remove only the liquid sewage and aste water from kitchens, bathrooms, and laundries. The pipes, which are round, e of vitrified earthenware, with cemented joints, and are in size from 3 to 12 inches diameter. The main sewer, of 12-inch pipe, begins at a point about 50 yards yond the hospital, and is continued parallel with the front of that building for 0 feet. It then makes a half turn to the left, crossing the parade ground diagally. From the northeast corner of the parade ground it is carried, with several anges of direction, to a point 600 yards below, where the sewage is emptied into o settling tanks, each 8½ feet in diameter and about 10 feet deep. By means of automatic siphons these are constantly emptied of their fluids, which are allowed to flow over a considerable area of porous soil and in part irrigate a company garden. The solids are removed once in 12 months, or oftener if necessary.

The main sewer in its passage through the post receives the flow from the larger drains, into which in turn the waste pipes empty. The sewers are flushed in two ways: (1) The main sewer at its origin above the hospital has an open mouth, into which the water from an acequia is daily turned at seasons when the acequia contains water; (2) three flush tanks have recently been placed at various points on the medium-sized sewers. These are supposed to be automatic and to flush intermittently, but they are worthless unless worked by hand. At present they are untrapped and emit foul odors. As is evident, both these methods fail in the dry season for lack of water, and, as a result, sewer gases are freely generated, which, escaping, pollute the atmosphere and constitute a menace to health.

When the system was first inaugurated ventilators were placed at intervals along the larger sewers, but probably owing to insufficient flushing they speedily became such a nuisance as to render their closure necessary. At the present time there are no ventilators along the main sewers. The kitchen waste pipes, as they leave the buildings, are ventilated by grease traps (very recently placed) having a 4-inch iron pipe run several feet above the roof. Into these traps empty also, whenever practicable, the waste pipes from bathrooms.

The fall is ample, being over 3 feet in 100 yards on the parade. The defects of the system are several: The sewers and drains are too small for the amount of liquids they are at times required to convey. Many of the smaller pipes turn at a right angle or are entered by T-branches instead of Y-branches or curves. The pipes, instead of having an even and steady fall, are laid according to the uneven conformation of the ground, thus facilitating breaking of joints and permitting settling of solids, which results in choking of pipes and excessive generation of gases. These gases at times break the seals of drain traps and enter the houses. There is no provision for the removal of solid sewage, notably human excreta.

A difficulty with which we have to contend is the formation of an extremely hard cement resulting from the mixture of grease in the sewage and the hard water. This thickly coats the interior of the pipes, sometimes nearly occluding them.

Human excreta are disposed of by the dry-earth system. Wooden draw boxes are placed beneath the privy seats and their contents are removed every morning by the scavenger, a civilian in the employ of the Quartermaster's Department. While the system is perhaps the best possible in the absence of water carriage, it, of course, offers many objections which could not be urged against the latter. The draw boxes are unlined, permitting saturation of the boards and ground beneath with urine.

Garbage is placed in covered zinc barrels and is removed each morning by the scavenger.

Contents of privy draw boxes, garbage, and ashes are deposited a half mile or more below the post in the direction opposite to that from which the prevailing winds come.

As reported last year, the disposal of the sewage of Fort Logan, by irrigation on a neighboring ranch, has so far given satisfaction to all concerned; but the ranch, in the progress of improvements, is open for sale for building purposes, and some other method of sewage disposal must soon be considered. The difficulties that may hereafter attend the disposal of sewage at this post show the necessity for a thorough consideration of this point in the selection of sites for military posts. The present method at Fort Logan is liable to be abruptly terminated by causes beyond the control of the military power, and it is safe to say that the 50,000 or 60,000 gallons of liquid waste daily thrown out from this post will not be permitted to flow into either of the streams in the vicinity.

Early in the year the post surgeon at Fort Schuyler invited attention to the open frame structure projecting over tide water and used as a water-closet by the men, characterizing it as a disgrace to any garrison in the Army. As a result of this the Quartermaster's Department approved a contract for a suitable building and fixtures for water-closets, wash rooms and bathrooms between the beach and barracks, and for a sewer from the noncommissioned officers' quarters to the beach. Similar recommendations were made by the medical officers stationed t Fort McHenry, and with similarly favorable results as regards the onstruction of water-closets and better bathing facilities for the men.

Several years ago the necessity for a sewerage system for the important post of Fort Monroe and the rapidly growing civil community at Old Point Comfort, Va., was strongly urged. A plan submitted by Col. Haines, U. S. Engineers, of pumping the sewage into the outgoing tide was approved by the Surgeon-General as likely to prove true economy in the end, notwithstanding its first cost. As a result of the efforts of that time the sum of $25,000 was appropriated by Congress March 2, 1890. In his subsequent reports the post surgeon continued to refer to the insanitary condition of the post and its surroundings, and in May, 1891, he cited, as special nuisances, the methods of sewage disposal at the hotels on the Point, the Hygeia throwing out the excreta of 1,000 persons on the beach above low-water mark, and the hotel near the main gate of the post accummulating the excreta of 100 people in a foul cesspool. From the papers on file it appears that the work of the Engineer Department, under the appropriation for sewerage, was delayed with a view to make an efficient system for the whole of the Point by getting the civilian community to construct their sewers in accordance with the Governmental plans. Col. Waring, of Rhode Island, devised a system on behalf of the property owners to be used by them conjointly with the Government. This plan was considered unobjectionable in its general features by the Secretary of War, but before giving it his approval certain alterations of detail were insisted upon, as, for instance, that the capacity of the reservoir be increased from 130,000 to 180,000 gallons; that provision should be made for maintenance; that the property owners should keep on hand an efficient outfit of machinery, in duplicate, and that the outlet of the force main should extend into the bay not less than 600 feet beyond low-water mark, etc. However, no progress was made, and in May, 1892, in view of the danger of cholera from Europe, the post surgeon called attention to the insanitary conditions of the post and its surroundings, urging that the hotels be required to begin their sewerage system, and that work on the Governmental system be no longer delayed. Col. Frank, the post commander, recommended that the hotels be required to construct their system within a limited time or close their houses. The Surgeon-General forwarded this paper to the Secretary of War, inviting his attention to what he characterized as the gravest sanitary error of the day. "The Medical Department," he said "has unceasingly endeavored to have it rectified, but so far without success. Great as is the necessity for this work in the fort it is as nothing compared with that for the hotels, whose population, drawn from all parts of the country, the bearers of all varieties of disease germs, and under no sanitary control, is an ever-present menace to its own health as well as to that of the garrison that is compelled to be its neighbor. The lodgment of disease germs under conditions so favorable to their cultivation will result in disaster from which there can be no relief, and I join in earnest concurrence with the recommendations of the post surgeon and post commander that the hotel people be compelled to construct the needed sewerage at once or that their houses be closed." In June, it appears from the reports, that the proprietor of the Hygeia Hotel took steps to extend the sewer pipes of his establishment, concerning which Col. Frank reported:

> This will, however, only mitigate to a limited extent the evil complained of, as the sewage will continue to be thrown on the beach. What is needed is a complete system which will meet the wants of all the hotels and will correct other and equally serious faults.

On July 30 the Surgeon-General again urged that the hotels be closed unless the parties interested commenced their sewerage system ar had it completed within a specified time. Again, on September 5 he addressed the Secretary of War on the subject, asking that the evils be remedied at once. The files of the Surgeon-General's office show that the last-mentioned communication was referred by the Secretary to the Chief of Engineers with the remarks—

> It is understood that the Chief of Engineers has abandoned the idea of having a common system for the Government and private parties, and has determined that there should be one system for the Government and another for private parties. If such is the plan to be carried out it would seem that there ought to be no delay in carrying it out and in constructing and putting in operation the Government system at least to the full extent of the appropriation.

The Chief of Engineers explained that work had not been commenced, as the act appropriating $25,000 stipulated for a complete system, which could not be constructed for less than $45,000. At the close of the fiscal year the status is understood to be that an estimate will be submitted by the Chief of Engineers for funds necessary for the construction of a sewerage system for all the buildings at the post.

Meanwhile, as shown by the following extract from the sanitary report for the last month of the fiscal year, the conditions continue to call for immediate remedial measures:

> The buildings and grounds of the post have been kept as clean as possible during the month. Some heavy falls of rain, aided by high tides and easterly winds, backing up the sea water outside and retarding the flow from the drains, have flooded the parade ground and kept it flooded for several days at a time. These shallow ponds of water evaporating slowly cause foul smells from decaying vegetation, and would be sure, if this condition of things was repeated during the summer, to bring on much malarial disease. The level surface of the parade and its slight elevation of only a few feet above the water outside makes it very difficult to drain it properly, but something should be done either by cleaning out the present drains or cutting some open ones for temporary use, or by any means that would be found advisable to have this flood water carried off more promptly.
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> The sewerage of the fort and of the buildings outside on the reservation remains in the same defective and dangerous sanitary condition as stated in the sanitary report for April and former months.

The addition of grease traps to kitchen sinks or house drains was recommended by two or three medical officers during the year. These traps, when suitably arranged and carefully attended to, are theoretically of use in connection with the waste-water pipes of large messes, particularly where there is an insufficient fall. Practically they are so liable to become a nuisance when the necessary care is intermitted that it is questionable whether their use in any case can be recommended. They are certainly needless in the kitchens of officers' quarters, as care on the part of the cook and an occasional flushing with lye will keep the pipes clean. The following is from the report for June last of the post surgeon, Fort Thomas, Ky:

> In view of the remarks of the post quartermaster in an indorsement dated May 12, 1893, and the opinions stated in a letter dated Surgeon-General's Office, Washington, May 26, 1893, and my personal observations during the summer of 1892 and the past month, I am now of the opinion that the grease traps provided on the kitchen drains of the general mess and of a number of officers' quarters at this post are little better than cesspools, and are of no use and are a menace to the health of the command. They require constant attention and a considerable expense in the way of disinfectants and water for flushing, and yet it is impracticable to keep them as pure as they should be to prevent bad odors arising from them. No obstruction of any drain at this post ever appears to have resulted from the absence of grease traps from the drains of the hospital or the nine sets of officers' quarters mentioned in the indorsement of the post quartermaster above mentioned. As they can serve no other useful purpose than to prevent such obstruction and are unnecessary for that purpose and are otherwise objectionable, it is respectfully recommended that all kitchen drains be connected directly with the sewer or special drain into which they now discharge and that the grease-trap tanks be filled up.

Disposal of garbage, etc.—The usual method is to collect in closed barrels or galvanized iron pails and transport to a dumping ground in the vicinity of the post. For convenience, ground near the inhabited area is selected, and the accumulations of years become so extensive as to be a nuisance and a reproach. Ashes and cinders may be utilized on roads or in filling, and if not required for such purposes their deposit is not injurious. Stable manure also can generally be used upon gardens; but there is at every post much unavoidable solid waste that should be destroyed, and a crematory of moderate size should be built at all the modern and permanent posts. Where the reservation is small and surrounded by civil communities it is imperative to dispose of the wastes in this way. A crematory was built at Fort Columbus in 1885, and rebuilt on a larger scale two years ago on plans of Lieut. H. J. Reilly, Fifth Artillery. It consists of a fire-brick chamber divided into three spaces by iron gratings which support the garbage. A tall chimney gives a powerful draft and the combustion is almost perfect. There is no offensive odor and the smoke is ordinarily scarcely perceptible. No special provision is made for consuming the products of combustion, but those living on the island have experienced no inconvenience from them. A furnace was built at the dumping ground at Columbus Barracks several years ago, but it proved inefficient and was disused. Now, however, there need be no uncertainty as to the efficiency of a garbage crematory. They have proved successful in many instances. It is understood that one will be built soon at Davids Island and another at Madison Barracks. One, having a capacity of 35 cubic yards, has been erected at Fort Sam Houston and one, of 8 cubic yards' capacity, at Fort Sheridan; Fort McPherson also has a crematory.

WATER SUPPLIES.

The subject of water supply has been agitated earnestly during the past year at many of the posts, with the result in most instances of carrying out or instituting improvements. The water wagon is now practically a thing of the past. It exists only at Fort Du Chesne and Eagle Pass. At the former it brings water from the Uintah River; at the latter from the hydrants of the neighboring town. In the east the analogue of the water wagon is found at only one post, Fort Wood, where, when the cistern supply of rain water becomes exhausted, purchases are made from the Croton Water Works Company and transported to the island in boats; similar conditions are found at Alcatraz Island in San Francisco Harbor.

At many of the posts no recommendations were made during the year, the water supply being understood to be satisfactory both as to quantity and quality. Among these were posts supplied from various sources, as rain-water cisterns, springs, ponds, running streams, wells, artesian wells, and city supplies, as follows:

From cisterns.—Jackson Barracks, Key West Barracks, and Fort Wood, just mentioned. Jackson Barracks has also a supply for police, fire, and other general purposes from the Mississippi River.

From springs.—Angel Island, Forts Huachuca and Mackinac, Mount Vernon Barracks and Forts Niobrara, Robinson, Sherman, Snelling, Supply, Townsend, and Walla Walla.

From ponds.—West Point.

From running streams.—Forts Assinniboine, Bidwell, Brown, Buford, Canby, D. A. Russell, McKinney, Missoula, Pembina, Ringgold, Sill, and Spokane. At the first-mentioned post an effort is in progress to find artesian water. At Forts Brown and Ringgold the drinking water used is obtained from a condensing coil attached to the ice machine of the medical department. The remarkable change in the malarial sick rates of the former post since the condensed water was substituted for the impure water of the Rio Grande has already been pointed out.* The post surgeon at Fort Ringgold is of opinion that all the malarial fevers that occur in his command are contracted while the troops are on service away from the post. The value, he says, of the use of distilled water as a prophylactic against malarial and typhoid affections was first observed in connection with the employment of the condensed water produced in the process of manufacturing ice. When this fact was recognized a large condenser, yielding 2,000 gallons per day, was procured. The water is hauled to the quarters in a tank cart and kept for use in 24-gallon galvanized-iron cans.

From wells, mostly in river bottoms.—Forts Bayard, Hancock, Keogh, McIntosh, Riley, Sidney, Sully, Vancouver, Yates, and Whipple Barracks. Condensed water from the ice machine is used also at Fort McIntosh.

From artesian wells.—Forts Logan, McPherson, and St. Francis Barracks. The first-mentioned has also a connection with the mains of the city of Denver.

From city supplies.—Boisé Barracks, Fort Brady, Columbus Barracks and Fort Columbus, Davids Island, and Forts McHenry, Marcy, Mason, Niagara, Ontario, Plattsburg, Pilot Butte, Porter, Preble, Schuyler, Thomas, Trumbull, Wayne, and Willets Point.

The following extracts from the reports of Lieut. William F. Lippitt, at Eagle Pass, and Capt. James E. Pilcher, at Fort Ringgold, show the advance made in the past few years by the substitution of a piped supply for the water wagon and its barrels, usually old vinegar barrels obtained by courtesy from the Subsistence Department:

Camp at Eagle Pass.—The sanitary condition of the buildings at the camp is as good as possible in their present dilapidated condition. The drainage is surface, and efficient in this dry weather. The dry-earth system for the removal of excreta is well kept up and is efficient. During the past month the quality of the water has been bad, the water being very much discolored and at times showing traces of organic matter due to deficient filtration of the river water. The water company from which the water is obtained has promised to remedy this. The present system of water supply is a very bad one, especially for this place. It is impossible to prevent the dust from the town of Eagle Pass being blown into the barrels, and no matter what care is taken the water becomes offensive both as to taste and smell. Eagle Pass is a very dirty town, the authorities of which do not make the least attempt at keeping it in sanitary condition. The strong north winds, so prevalent here during the winter months, blow directly from the town, and carry with them large quantities of this dirt, which find their way into the water barrels and houses, and can not but be injurious. There have recently been several cases of malarial fevers here, which I can ascribe to no other cause. The post itself is kept in good sanitary condition, but beyond this no attention whatever is paid to such matters. The water has been sufficient in quantity, but the summer is approaching, when it is very difficult to keep a sufficient supply by the present system. I would, therefore, recommend that the water be brought by pipes connected with the town system.

Fort Ringgold.—The water supply is derived from the Rio Grande River. The pumping apparatus consists of two boilers, one of 35 and one of 59-horse power, two engines, two settling tanks and four storage tanks, together with their connecting pipes and water mains.

The engine house is situated upon the banks of the river. The engine drawing the water from the river is a Dean pump with double plunger, of 15-horse power and a capacity of 18,000 gallons an hour. It is located in a well 16 feet deep and 12 by 16 feet at the bottom, which is 13 feet above the level of low water. In this well is located also a Blake pump of 12-horse power as a reserve in case of breakage.

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* See *supra*, p. 61; also Report Surgeon-General, 1892, p. 74,

The turbidity of the river water, due to the suspension of a large amount of inorganic matter, is extreme, and it can hardly be used with advantage in its natural condition. In order to permit the subsidence of the suspended matter, two settling tanks have been provided. These are situated upon the side of a small hill, respectively 18 and 27 feet above the level of the Dean pump, and 410 and 348 feet, respectively, from it. The settling tanks are 35 feet square and 9 feet deep and have a capacity of 83,560 gallons each. The water from the river is pumped directly into the upper settling tank through a 3-inch pipe. After the suspended matter has subsided, a process requiring from half an hour to eight hours, the clarified water is decanted through two 4-inch pipes into the lower settling tank. There it remains until it is needed for the storage tank, such silt as may still be present being meanwhile precipitated.

The distributing machinery consists of a Worthington duplex pump of 24-horse power, with a capacity of 20,000 gallons an hour, and four storage tanks, at a sufficient height to distribute the water by gravity. The clarified water flows by gravity through a 4-inch pipe to the Worthington pump, which stands on the floor of the engine house, and is forced through a 3-inch pipe into the storage tanks. These tanks are tub-shaped, with staves of Louisiana cypress, strongly banded by wrought-iron hoops, and each mounted upon a pier of solid masonry; they are 16 feet in diameter, 12 feet high, and have a capacity of 16,000 gallons each. A circulation throughout the four tanks is obtained by connecting pipes of 3 or 6 inch caliber, rendering them equivalent then to a single tank of 64,000 gallons capacity.

The hill upon the summit of which the storage tanks are located is 25 feet above the level of the parade ground, and they are further elevated by masonry piers to a height of 35 feet above the mean level of the garrison. At this mean level the pressure obtained is 45 pounds per square inch.

The water is carried from the storage tanks by one 6-inch and two 2-inch iron mains. The 6-inch main passes from the northeast side of the tanks down the hill 250 feet, on a line perpendicular to that of the officers' quarters, to a point 30 feet in the rear of the quarters, where it meets a line of 6-inch pipe 1,000 feet long, running parallel to the officers' line. Upon this main are situated five fire plugs, from which any of the officers' quarters, the hospital, and the quartermaster and commissary storehouses may be reached by a moderate length of hose. From this main pass off two 2 inch iron pipes, from which 1-inch pipes pass to small hydrants between the officers' quarters for watering the grass and trees, and to each set of officers' quarters supplying faucets in the kitchen and urinals on the first floor, and the bathroom on the second floor. These 2-inch pipes connect with another set of the same caliber, which completely encircle the parade ground, and send off a branch to the hospital. Upon this circle are situated four fire plugs for the fire protection of the barracks, guardhouse, and bakery, and the officers' quarters. The circle gives off in 1-inch iron pipes the water supply of the hospital, the barracks, and company bathhouses, the enlisted men's water-closet, the bakery, and guardhouse, the married soldiers' quarters, and contributes two hydrants to the post garden.

A 2 inch main, passing from the southeast side of the storage tanks, goes to the hay corral and to the commissary storehouse, supplying a fire plug to each, and to the engine house, supplying the boilers and the apparatus for the distillation of water. It gives off a 1-inch pipe for the supply of the noncommissioned staff officers' quarters.

A 2-inch main passing off from the northeast side of the storage tanks goes to the quartermaster and troop stables, supplying a fire plug there and at the quartermaster's storehouse. By 1 inch pipes it supplies the blacksmith shops and the water troughs of the stables.

Connected with the kitchen range of the hospital, barracks, and officers' quarters are water backs, with boilers of a capacity ranging from 60 to 30 gallons, by which hot water is supplied in kitchens for cooking purposes, and in bathrooms for bathing.

The hospital is fitted with an exceptionally satisfactory bathroom, containing two porcelain-lined tubs, with hot and cold water, and a shower bath, which will leave nothing to be desired when the repairs, for which estimate has just been made, are completed.

Each company occupies a small building in the rear of its barracks as a bath house. They are rather rudely fitted, each with two zinc-lined tubs, a shower bath, and a trough for washing the hands and face. Hot water is obtained in small quantities from the kitchen boiler, connections with which have been made during the past year; but the amount is altogether insufficient for the large number of men who should use it. A larger bath house, with ample boilers and efficient fixtures, at a point central to all the barracks, is proposed, but the plans have not been submitted to the medical department as yet.

The guardhouse has during the present year been supplied with a bathroom, containing a washing trough and a bath tub. It is hoped that a shower bath will soon be added as being altogether the most suitable apparatus for the locality.

Each set of officers' quarters has at the rear end of the second story hall a b room supplied with a zinc-lined bath tub, with hot and cold water connections

The garrison, with the exception of one set of officers' quarters, still lacks sta ary washtubs, which are recommended to be introduced at an early date.

There is at the post a Hyatt patent water filter, with a capacity of about 1 gallons per day. This apparatus, however, has never been set up, the settling ta supplying the clear water demanded for the ordinary needs of the garrison. B the summer, when a larger amount is required, it is impossible always to su clear water from the settling tanks. It is recommended that, to meet this em gency, the filter in question be put up.

All of the pipes used in distributing water are of iron, some of them plain others galvanized, the character varying apparently according to the fancy of purchasing officer.

The water obtained by the foregoing system is ample in amount for all purposes, experience has shown that it contains a greater or less quantity of septic organi ter, rendering it unsuitable for drinking purposes except when boiled. The pres of a small percentage of alkali and other inorganic matter contributes to render it less potable. This post was for many years a nidus for affections of a malarial typhoid type, which were properly attributed to the drinking water. Dist water is now supplied in ample quantities for drinking purposes, as a result of wh these affections are eliminated from our records except as they are brought here other localities. The value of the use of distilled water as a prophylactic aga malarial and typhoid affections was first observed in connection with the emp ment of the condensed water produced in the process of manufacturing ice at t post. When this fact was recognized a large condenser was obtained, by the u which 2,000 gallons of distilled water per day are obtained. This water is haul to the quarters in a tank cart and kept for use in 24-gallon galvanized iron cans

The heat was formerly a fruitful source of disease, but this is now very larg neutralized by the product of the ice machine, one of the most important feat of the water system of the post. The machine is a Schuehle engine of 8 hor power, operating two freezing tanks, producing 42 bars of ice each, with a capa of 2,940 pounds of ice per day, or over 1,000,000 pounds per year.

There are still at the post six cisterns, of a capacity varying from 30,000 to 10 gallons each. These were used for the accommodation of rain water at a peri prior to the introduction of the settling tanks, and when the turbid river water the only other resource for drinking water. These cisterns are useless now, and t post surgeon, recognizing a source of infection in their stagnant contents, has rec mended that they be emptied and kept clean until they are needed again. They a located one at each side of the space between the two barracks fronting on the rade ground and at each end of the hospital, one in the rear of quarters No. 5. one at the end of quartermaster's storehouse No. 34.

The cost of the pipes and fittings contained in the water system was appro mately $2,780. The expense of maintaining the water system, including the machine, is about $215 per month.

The water supply of so many posts formed the subject of so mu consideration, discussion, and recommendation during the year tha seems impossible to invite attention in a general way to the vario points involved. The simplest method of dealing with the matter w be to refer briefly to the defects reported, the recommendations ma and the improvements accomplished or in progress at each of the pos under their respective names, arranged alphabetically for convenie of reference.

Fort Adams, R. I.—The subject of water supply at this post is of considerable difficulty. In 1888 well water was used, but this ha ing been found to be of bad quality the water of the Newport Wa Company was introduced. This water, however, speedily failed to g satisfaction. It is a surface or pond water, largely charged with ve table impurity, and has been reported upon unfavorably by many p lic analysts and sanitary chemists. During the year the post surg invited attention to the matter and the well water and city water w again examined, the result in both instances being unsatisfact Suggestion was made of artesian borings, but the U. S. Geolog Survey entirely disapproved of any effort in this direction. Thereu the medical department recommended the use of a condenser cap of providing 2,000 gallons of drinking water daily. An estimat

$1,850 for this purpose is understood to have been forwarded for consideration.

Alcatraz Island, Cal., is supplied with fresh water for drinking, cooking, etc., and salt water for baths, flushing of sewers, and use in case of fire. The latter is pumped from near the wharf to distributing tanks on top of the citadel. The former is brought by steamer from the pipes of the Spring Valley Water Company and forced by the pumps of the vessel into a series of twenty-one cisterns under the flower gardens of the citadel and also into tanks on its summit, to which it is raised by means of a windmill. The tanks supply the citadel, light-house, adjutant's office, hospital, etc., on the high ground, and the cisterns distribute to the buildings on the lower levels. The cisterns contain over 230,000 gallons, and are connected with each other at top and bottom so as to form but one reservoir. Each, however, if necessary, may be disconnected from the others. Question was raised during the year as to the purity of the water furnished by the Spring Valley Water Company. (See below, page 128.)

Fort Apache, Ariz.—The water supply of this post was taken from the East Fork of White River, about 3 miles above the post, and was led along the high ground bordering the river bottom in an acequia, which was often broken by cattle and in winter by frost. At the establishment of this military station the water thus obtained was pure, but in the progress of years it became more and more fouled by Indian settlements and the irrigation of farms in the river bottom above the intake. During the year there was dug in the bottom land a well 22 feet deep, which yields an abundant supply of cool, clear, and pure water. The ditch, however, is still kept open for general purposes and in case of need. The details of the water system from the acequia is given in Capt. N. S. Jarvis's report on the high sick rates prevailing at his post. See page 32.

Fort Barrancas, Fla.—The cistern supplies of rain water at this post will hereafter be disused in favor of water from two deep wells,* which are thus described by the post surgeon:

> The water is supplied from two wells a few feet apart in front of the engine house. They are respectively 200 and 300 feet deep, both furnishing an abundant supply of potable water of good quality. The geological formation, as given from the borings, are, first, 56 feet of clean white sand; second, a stratum of blue clay or marl, 12 feet thick. At a depth of 260 feet another stratum of the same description is penetrated. Between these two are a number of small strata (2 feet) of yellow sand and clay, with layers of fine sand varying in color from white to a dirty gray.
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> The water is laden with iron rust from the pipes, due to an insufficient coating of coal-tar compound; it is also impregnated with grease from the packing of the joints. This, however, is a temporary disadvantage, which will disappear in the course of time. The water from the cisterns is still used for drinking purposes. * * *
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> The boiler is spoken of in the specifications as "the economic return tubular portable." It is of 50-horse power capacity, 44 inches diameter, 13 feet length, and made of $\frac{5}{16}$-inch steel, of 60,000 pounds tensile strength for square inch of section. The furnace beneath is 44 inches wide by 50 inches long. The whole structure stands $9\frac{1}{2}$ feet high, 13 feet long, and 4 feet wide. The boiler has been tested under high pressure, and is considered perfectly safe under 80 pounds. It is usually operated under a pressure of 60 pounds steam. In the boiler room, and connected with the boiler by a 2-inch steam supply pipe, is a duplex water-supply pump with 10-inch steam and 6-inch water cylinders, 10-inch stroke. The pump is connected with the two wells by a $4\frac{1}{2}$-inch suction pipe, and to the 4-inch cast-iron water-supply pipe by a wrought-iron discharge pipe of the same size. To utilize excess of power an engine has been constructed to run a cross-cut saw for sawing fire wood.
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> Connected with the discharge pipe, as mentioned above, is a system of 4-inch cast-iron smooth-bore water-supply pipes, hub and spigot joints, well calked with hemp yarn and lead; the pipes are laid 2 and 3 feet under surface; each pipe is 4

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*See analysis of water, p. 134.

inches diameter, one-half inch thickness, 12 feet length, 3½ inches depth of socket, 264 pounds weight. The pipes were cleaned and coated with coal-tar composition before laying, and were found free from sand holes and other defects. Thirteen double-nozzle fire hydrants and three single-nozzle, all with gate valves, valve boxes and covers, are connected by 4-inch T branches, with the water main at appropriate places. Three of the single-nozzle hydrants, from their proximity to manholes of the sewer system, are used for flushing the sewer. In addition to the above there are three yard hydrants, and opposite each house the water main is tapped by a brass stop-cock ferrule with box and cover.

The standpipe in rear of quarters No. 13 consists of a covered steel tank 20 feet in diameter, 15 feet high, supported on a truss 40 feet high. The plates used in the tank are one-fourth and three-sixteenths of an inch thick, well riveted, and joints well calked, so that it is perfectly water-tight. The truss is of wrought iron and perfectly substantial; it rests upon foundation piers of brick and stone anchored to the same with iron rods. A wrought-iron ladder is in place; lower half removable. The roof of the tank is constructed of iron rafters covered with corrugated iron. The 4-inch cast-iron supply pipe is connected with the water main by a gate valve at a point south of the standpipe. The 6-inch wrought-iron overflow pipe runs from a point in the tank near the top down through the bottom of the tank into the ground, where it connects with a 6-inch sewer pipe leading off about 60 feet. The tank has a capacity of about 15,000 gallons. When full its subjects the pipes to a strain of 40 pounds pressure, which is well borne.

Benicia Barracks, Cal.—The chief dependence of this post for drinking and kitchen supplies is on rain water, collected in eight large cisterns under the principal buildings. It has also two wells, from which water is pumped by windmills into tanks, and distributed by pipes to the houses. This water contains alkaline earthy salts, and although used chiefly for washing and baths, is not objectionable as drinking water. The quantity, however, of both of these supplies is liable to be deficient in summer, when recourse is had to the city supply, with which there is a connection; but this consists of surface drainage charged with alkaline and earthy salts and more or less of organic matter.

Fort Bliss, Tex.—Two deep wells have been drilled at the new post, the first 236 feet deep, the second 309 feet. The water is somewhat hard, and presents the anomaly sometimes exhibited by deep-well waters of containing nitrites with no concomitant indications of the presence of organic matter. Its temperature is about 70° F. The supply is limited only by the capacity of the pumps, and is believed to be practically inexhaustable.

Fort Bowie, Ariz.—The water supply is from Bear Spring, 1 mile east of the post. The water flows by gravity through pipes to a storage reservoir, whence it is pumped into distributing tanks. Formerly this supply was amply sufficent for the wants of the post; but during the past two years, which have been unusually dry, it has been needful to supplement it by hauling from another spring on a lower level. The post surgeon recommended a pump for this lower spring, but the post commander objected that this would necessitate a new water plant or the moving of the engine house and machinery and the building of new reservoirs at great expense in either case. Recently the unusual and continued dryness has caused Bear Spring to dry up, and the lower spring, which formerly yielded fourteen wagon loads per day, yields only six loads or 3,800 gallons. There is a third spring in the vicinity, but it is in a gulch into which enters all the drainage from the earth pits and sewers of the post. It is hoped that the summer rains will speedily replenish the water supply, otherwise the post will have to be abandoned.

Fort Clark, Tex.—The water supply of this post is from Las Moras Spring, which rises in the center of a pool one-eighth of an acre in superficies and 2 to 15 feet deep. This pool is filled with vegetation and is subject to inflow of surface washings during rains. Malarial fevers have been attributed to its use.* The medical director was of opinion that this spring is connected by underground channels with the drainage of the town of Brackettville, but an analysis of the water did not sustain this theory of its origin. Chemical investigation showed that the water issuing from the spring was of a much purer character than that taken from the surrounding pool. It was therefore suggested by the post quartermaster to protect the spring water by confining it within an iron cylinder, 15 feet in diameter and 18 feet high, embedded in a base of cement on the surface of the rock. The latest reports from this post represent the project of sinking a cylinder on the plans drawn by the quartermaster as at a standstill, and the spring flooded with storm water. The spring water is used for general purposes, but is boiled before use in the barrack rooms. Condensed water has been issued, but is disliked by the men on account of a taint of iron rust and machine grease. An estimate has been forwarded for material and labor to perfect the condenser.

Fort Custer, Mont.—The water at this post is pumped from the Little Horn River into distributing tanks. Offal from the slaughter-house of the Crow Agency, some miles above the post, is thrown into the river and is seen floating past the intake of the supply. Efforts are being made to prevent this contamination.

Fort Douglas, Utah.—The water of this post, from the creek in Red Butte Canyon, was examined at the instance of the post surgeon and found to be of excellent quality.†

Fort Grant, Ariz.—This post has suffered from a scarcity of water for several years back. Last year the piping was extended 13,500 feet farther up the canyon under the impression that a permanent supply would thus be procured. The expectation, however, was not realized, for recently the water supply again gave out, and it is now understood that plans and estimates for a well are under consideration.

Jefferson Barracks, Mo.—In view of a somewhat notable prevalence of typhoid fever in the city of St. Louis the depot surgeon recommended that the water supply be boiled and filtered. This supply is derived from the city mains, but before its distribution it is passed through two filters—cast iron tanks filled with broken stone, gravel, and sand—in the water tower. One of these became unserviceable and an estimate for a new one was disapproved on the ground that the object could be accomplished by the repair of the old one. Prior to 1888 the river water was pumped directly into the post, and much sickness was attributed to its use; but in reporting the changes effected during that year the depot surgeon stated that—

> The connection with the St. Louis mains has been a crowning success, for from the delivery of that water supply dates the great change in the sick report of the depot.

The admissions per thousand of strength in 1885 were 3,115; in 1886, 3,008; and in 1887, 2,133. The continuance of these high rates called imperatively for action, and the connection with the St. Louis mains was effected, with the result that in 1888, the year in which the change was made, the rate began to decline, and in 1889 it fell to 966, and in 1890, 1891, and 1892 it was, respectively, 1,000, 1,008, and 875. The water of the Mississippi River is decidedly unfit for the supply of a great city like St. Louis or for that of an important military post, as it is always liable to convey the infection of typhoid fever from the sewage of settlements higher up; nevertheless it is at present the best available both for the city and the recruiting depot. It is at times muddy, as are most of the supplies taken from large rivers. Sedimenting the water or filtering it improves its appearance and tends to remove any malarial element that may be present; and to the sedimentation in the St. Louis basins, and the filtration in the water tower at the depot, must be attributed the great diminution of malarial diseases that lowered the admission rates as above stated. Neither of these processes, however, can be depended upon to remove typhoid infection. This can be readily understood when it is remembered how often typhoid fever has been propagated by well waters that have undergone a thorough natural filtration.

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* See p. 55.

† See analysis p. 134.

Leavenworth Prison.—The river supply at Fort Leavenworth and the Military Prison has repeatedly been pronounced unsafe by sanitary authorities, and suggestion has been made of experiment to determine the possibility of obtaining a supply by well-driving. The occurrence of four cases of typhoid fever last autumn led the prison surgeon to renew this suggestion, indicating a valley northwest of the prison as a proper site for the experiment. This was authorized by the major-general commanding, and borings are now in progress to determine the practicability of such a system.

Madison Barracks, N. Y.—The water supply of Madison Barracks is obtained from Black River Bay in front of the post and a short distance below the outfall of the sewers. The water on analysis gave no indication of the presence of sewage from the local sewers nor from the settlements on the river above the post. Nevertheless, as the direction of the currents showed the possibility of sewage being carried to the intake, it was decided to extend the inflow pipe 450 feet into the bay. While this was in progress typhoid fever, introduced from Binghamton, N. Y., gave rise to twenty-seven cases with two deaths.* Samples of water from the existing intake and from the proposed position were found to give no indications of the presence of sewage; but the spread of the fever among the troops brought fully to mind the dangers attending a polluted supply, and led to the condemnation of the proposed intake as being not sufficiently out of the line of sewage contamination. Henderson's Bay, on the south side of Horse Island, furnishes lake water without admixture of the dark colored water of the river. This water has been analyzed with satisfactory results and has been recommended for the supply of the post.

Fort Meade, S. Dak., is on the south bank of Bear Butte Creek, about a mile below, or to the eastward, of the town of Sturgis. For several miles above Sturgis the creek is dry; but at the east end of the town, where the creek bed is confined by a rocky canyon, the water comes to the surface and flows past the post to the Belle Fourche and Cheyenne rivers, 20 miles below, sinking and reappearing several times on its way. On the north side of the bed of the creek, a short distance above its entrance into the canyon, are three springs purchased in 1888 for $3,000 for the supply of the post. A 2-inch wrought-iron pipe connects two of the springs; a 4-inch pipe unites the conjoined springs to the third one, and a 6-inch main leads the water to the suction valve of a pump at a level 27 feet below that of the springs. The pump forces the water through a 4-inch pipe into a reservoir, from which it descends for the supply of the post.

There appears to be no doubt as to the sufficiency of the supply nor as to its present quality. It is organically pure; but its hardness detracts from its value from an economic point of view. In November last the department commander instituted an inquiry into the character of this supply on account of the suggested likelihood of its becoming contaminated by the sewage of Sturgis, as that town was introducing a water supply from Warren's Creek in the mountains, 3¾ miles south of the town site, and its waste water would find its way into Bear Butte Creek about 800 yards above the springs. A board of officers failed to agree on the subject, the point at issue being whether the springs are independent springs or merely the bedrock flow of the creek brought to the surface by the shallowness of its overlying gravel. In the latter case there would be every likelihood of future contamination. If on the other hand, the springs are independent of the creek water, the question of contamination might be dismissed. A full consideration of the evidence indicates that the water comes from the limestone strata of the adjacent hills rather than from the creek. Floods affecting the creek do not correspondingly alter the flow of the springs. In any event, the protection of the springs from contamination by cattle, camps, or surface inflow, with the occasional testing of the water for organic impurity, is all that is at present deemed needful. A softer water for the post is desirable and could be had from the Sturgis supply, but the price asked, $27,500 for five years, is considered exorbitant. It is understood that the water company has recently submitted another proposition for the consideration of the authorities. After the new sewer system of Sturgis was put in operation samples of water from the creek, the springs, and the supply pipes of the post were examined, the result* showing that the sewage in no way affected the water supply of the garrison.

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* See page 45.

Fort Myer, Va.—The water supply of Fort Myer, Va., is derived from three wells, each about 25 feet deep, 10 feet in diameter, brick-lined, and suitably covered. It is pumped from these into three elevated tanks having a combined capacity of 40,000 gallons. This quantity constitutes a full daily supply for the present garrison, but during the past summer and autumn, which were unusually dry, the wells were not so productive, yielding at one time only about 5,000 gallons a day. Coincident with this deficiency in the supply was the development of remittent fevers,† and there is no doubt that the one was causally related to the other. At the site of the wells there was originally a spring, but the spring water is now lost in the preponderance of subsoil water, which drains into the wells from the elevated plateau on which the post is built. The water is essentially a rain water which has flowed over a soil rich in decaying vegetation, and which, in passing through the loose sand in which the wells are sunk, has not undergone a natural filtration sufficient to purify it. Its organic matter is in excess, and although the presence of nitrates shows that the filtration has been partially useful as a purifying measure, the associated presence of nitrites indicates that the source of the impurity is so near to the wells that the process of change is still in progress when the water is distributed for use. Such wells are especially prone to disseminate remittent fevers, and to become infected with typhoid, particularly when their waters are low. As a remedy for this condition the supply of the post by connection with the mains of Washington, D. C., was suggested. During the dangerous season of low water in the wells, boiling the water to be used as a drinking supply was recommended. Freedom from disease caused by the use of the well water could also be assured by distilling it. It is as yet not at all certain that filtration effected by artificial means can be relied upon to free a water from the causes of remittent fever, although no fact in sanitary science has been so fully demonstrated as the purifying influence in this respect of the natural filtration into deep wells. Congress, however, failed to authorize connection with the mains of Washington, D. C., whereupon, to prevent a water famine such as existed last summer the Quartermaster's Department made arrangements for pumping from the Potomac River near the Aqueduct Bridge into newly constructed tanks for police, stable, and fire uses. To provide a supply of wholesome drinking water an artesian well will be bored.

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* See page 134.

† See page 56.

Presidio of San Francisco, Cal.—The water supply of the Presidio is from the flume of the Spring Valley Water Company, which takes its water from Lobos Creek, in the southwest part of the reservation. It furnishes over 2,000,000 gallons daily to the city, 140,000 to the post, and 25,000 to Fort Point. The post supply costs nothing to the United States. Analysis, October, 1892, showed the water to be of excellent quality.

It is claimed by some that the extension of the city along the Presidio Heights to the south of the post will contaminate this supply at an early day, and that in consequence provision should be made for an independent supply for the post. The post commander therefore recommended that wells be sunk west of the post and near the road to Fort Point to procure a supply from the watershed of 125 acres west and south of the road referred to. The area is bare and easily protected from trespass. The rainfall of 20½ inches would amount to 70,000,000 gallons, from which the proposed wells would draw about 50,000,000. The water is or would be merely surface water. It has been tapped at 55 feet depth at the National Cemetery, near by. This well is worked by a windmill and gives 3 to 5 gallons a minute.* This recommendation having been referred by the Major-General Commanding to the Surgeon-General, the latter remarked as follows:

> It is probable, as represented in these papers, that a plentiful supply of good water can be obtained by sinking the wells on the reservation. At this time, however, the water of Lobos Creek seems to be exceptionally good. Precautions, however, should be taken to keep the flume in good order and free from dirt and impurities. I am informed it is now considerably out of repair. The proposed sewer runs across the southeast corner of the reservation and will not affect the water supply. In regard to the future disposal of the sewage of Pacific, Jackson, and Washington avenues, as they in the future will become occupied by dwellings, I am informed that it can be safely carried off, without infecting Lobos Creek, by sewers constructed of vitrified pipe and emptying either into the bay or the ocean. Aside from these sewers, danger of contamination of Lobos Creek exists from the watershed on the south side of the reservation. It is believed that it can be made little or none by properly constructed drainage, depending, of course, on the depth, now unknown, at which the subsoil water flows to the creek after soaking into the soil. Taking into view a possible contamination of the Lobos Creek water, it is recommended that a well be dug as a matter of experiment.

During the past year the post commander communicated with the surgeon in charge of the marine hospital on the reservation to effect a discontinuance of the cultivation of vegetable gardens at the hospital. These gardens, covering 40 acres, are heavily manured and irrigated, the drainage being into Mountain Lake. They are cultivated by persons unconnected with the hospital, who supply the small amount required by it for the privilege of selling the surplus for their own profit. By the terms of the consent given by the War Department to the Treasury Department to occupy a part of the Presidio Reservation for a marine hospital, the control of both Mountain Lake and Lobos Creek was expressly reserved by the War Department, the evident object being to insure control of the water supply of the post. The water supply of the Presidio has been much discussed during the past twenty years. The following extract from a report by Col. Joseph R. Smith shows the character of the criticisms:

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* See analysis, p. 134.

January 18, 1878, Surg. J. C. Baily reported that the drainage from truck gardens on north side of ground from which Spring Valley flume received its supply "is almost entirely into water sources. * * * A large garden south of Marine Hospital, as well as hospital stable, drains indirectly into the spring. A small garden at north end of lake and one on west side also drains into it. * * * The drainage of the Marine Hospital is almost entirely into the lake."

October 26, 1882, a board was ordered to examine and report the facts as to the drainage from gardens on Lobos Creek into the spring supplying Presidio, etc., with drinking water, and to what extent the wholesomeness of the water will be affected thereby, and to recommend the necessary action. The board consisted of the present Surgeon-General Sutherland, of Surg. J. C. Baily, and Maj. Randol, First Artillery. It examined the ground and reported that "One of these gardens is situated on the Marine Hospital reservation and the other on the Presidio reservation. Both of them border on Lobos Creek and the springs that feed it. The one on the Marine Hospital reservation is the most objectionable, as the entire ground drains into the creek, while a small portion of the garden on the Presidio reservation is on higher land and slopes slightly from the creek. Both of these gardens are covered with hundreds of tons of manure from which an infusion drains into the water of the creek, which must even now affect its wholesomeness, and during the rainy season will make it very impure and unfit for use. The board therefore recommends that both of these gardens be vacated as soon as practicable; that from this date no manure be put on the ground, all cultivation of the gardens cease, and that when vacated the sites be sown with grass seeds," and that "the houses used by the gardeners as a dwelling, stable, cow sheds, etc., be removed when the gardens are vacated."

Action as recommended was opposed by the authorities of the Marine Hospital and not carried out.

January 29, 1883, the board made a further report that "it adheres to the opinion expressed in its report for October 26, 1882, that the infusion from hundreds of tons of manure which drains into the creek must even now affect its wholesomeness, and during the rainy season make it very impure and unfit for use; and it respectfully renews the recommendation made in that report."

March 18, 1883, Maj. W. A. Jones, U. S. Engineers, addressed a letter to the adjutant-general of the department which so well covers some facts and considerations that I can not do better than quote a portion: "I have made a minute examination of the catchwater basin that drains into the sea through Lobos Creek, and find it to be substantially as shown on the map herewith, which also shows the gardens along said creek. The area of this basin is about 3.35 square miles. The escape of water from it has been largely modified by drifting sand, which now covers nearly the whole of it. This sand holds the water in a subterranean basin which has its outlet in the springs along Lobos Creek. On the borders of this basin are the Chinese, and portions of the Odd Fellows, Calvary, and Laurel Hill cemeteries. On the flats are extensive vegetable gardens and a few milk and hog ranches. The Marine Hospital and its gardens along the creek on the Presidio reservation are entirely on this watershed. Furthermore, the city is rapidly spreading toward it, and the day is not far distant when it will be extensively built upon. "There are now considerable settlements upon it. The discharge from Mountain Lake is through Lobos Creek, the water flowing subterraneously through the sand, first to the southward, and thence bending around to the northward into the creek. The deflection is caused by a sandstone ridge which runs along the western border of the lake. This ridge has been tunneled by the water company with a view of using the water from the lake in case the creek supply falls short. Water is now drawn through this tunnel to supply the flume from which the gardens on the Presidio reservation are irrigated.

"To what extent or distance the propagating poison of zymotic diseases can be transported by water after it gets into the ground can not, in my judgment, be estimated. In the present instance it is probable that the subterranean reservoir is so large that any organic pollution it may receive is either oxidized or diluted to such an extent as to be harmless by the time the water emerges at Lobos Creek. This can not be said, however, of the drainage water from the Marine Hospital and Presidio gardens along Lobos Creek. Here the contamination is immediate, and in times of considerable rainfall quite apparent to sight, taste, and smell. There are at present enormous quantities of manure spread over these gardens, and should a short season of considerable rainfall occur the water would certainly be rendered offensive from it. The supposition that a stream of water flowing 2,000,000 gallons a day through a small flume of redwood boards may, once in a while, be turned to a coffee-brown color from the coloring matter in the redwood is at variance not only with common sense, but with sound chemical judgment. It should be remembered that in ordinary circumstances the Lobos Creek water has, to all appearances, been of a superior quality It has been used by three military posts and a portion of the city with considerable satisfaction, and in times when it has not been satisfactory the trouble has been directly and reasonably traced to the manure on these gardens. The position taken by the Marine Hospital authorities is therefore substantially that because this water supply may possibly be contaminated from outside sources they may certainly contaminate it for the sake of getting some vegetables for marketing. I am satisfied that when it shall reasonably appear that for a paltry saving of $150 per month to a Government hospital the lives and health of a great many people are imperiled, or even by any remote possibility imperiled, the honorable Secretary of the Treasury will concur in the views of the military authorities, which are that all gardens draining immediately into Lobos Creek should be abolished. The policy of the military authorities should be undoubtedly to peremptorily stop all pollution of this water supply that is immediate and apparent, and whenever it shall reasonably appear that the water is polluted from sources beyond their reach the use of it for drinking and cooking purposes should be stopped and the supply for this purpose drawn from the immediate watershed of Mountain Lake, an area that is entirely within their control, and whose system can be kept clean and wholesome.

"This brings me to some general considerations that deserve attention. The day is rapidly approaching when the expensive system of keeping up a great many small military posts can be changed, and the cost of the military establishment very much reduced by concentrating the Army at a few important points; not only the economical administration but the discipline, efficiency, and general good of the Army would be very much improved by such a change in this direction. In such event the city of San Francisco would unquestionably be a point where a considerable number of troops could be effectively stationed, and they could be most economically kept here by concentrating the whole garrison at one post. (Of course the military prison at Alcatraz Island would require separate treatment.) The obvious place for such a post would be the Presidio reservation. As the future transcontinental railroads will have to go either through or alongside this reservation, supplies could landed here in bulk from both ship and car, and a great saving in transportation effected. The site is not only advantageous for quarters but roomy for military maneuvers of all kinds. Troops of all arms can be instructed here with very great advantage to both officers and men, and in time of need can be easily distributed among the harbor forts or rapidly sent to any points in the Pacific coast region. In time of peace to dilute the small garrison of a city among a number of small posts makes the establishment unnecessarily expensive, and at the same time cripples the possibilities in the way of instruction, discipline, and general efficiency.

"It thus becomes apparent that it will not be long before the whole of the water in Mountain Lake will be required for the use of the Presidio garrison, and as it will then be necessary to keep the watershed that supplies it clean, the presence upon it of such an establishment as a marine hospital, wherein are collected and treated the diseases of all creation, will not be compatible with the best interests of the Government."

What action, if any, was taken in consequence of the foregoing I do not know, but whatever was done, the nuisance was not abated, and December 28, 1889, the commanding officer, Fort Mason, reported that "the manifest condition of the water supply at this post, derived from stream on the Presidio reservation at a point within the marine hospital grounds, and the frequent reports of the post surgeon as to its poor quality for domestic uses, led to recommendations for the improvement by filtration." He also calls attention "to a certain and prolific source of contamination by the Chinese gardeners and others in the marine hospital gardens which surround the source of water supply of the Presidio, Fort Mason, and a considerable portion of the inhabitants of the city of San Francisco."

I am constrained to add that examination of official reports in the office of the medical director shows no disease to have occurred since then at the Presidio which was due to the use of the drinking water in question.

The constantly increasing population of the watershed furnishing the drinking water must be accompanied with a proportionate increase of contamination.

The probable approach of cholera demands prompt attention to the water supply, the water being a frequent means of spreading the disease, and therefore a prudent foresight demands that the recommendations made by the board and engineer officer heretofore quoted, be carried into effect or that a new source of supply of water found for the Presidio.

Fort Reno, Okla.—The water supply of this post has been a cause of much anxiety to medical officers for many years back. The main source, North Fork of the Canadian, was supplemented at first by wells and water wagoned from Caddo Springs, 4 miles distant. For three or four years back only one well has been used; the others were closed on the recommendation of various medical officers. Some of the disused wells have been converted into cesspools. The river water has been condemned by repeated analyses and the well regarded doubtfully. Caddo Spring water was used at first only by officers. The prevalence of sickness among the men, as compared with the good health of the officers and their families, has frequently been a subject of observation in connection with the fact that the latter do not use the river water, but have their supplies wagoned in kegs from Caddo Springs. The number of cases of sickness among the men at one period led Capt. J. Van R. Hoff, then post surgeon, to urge the introduction of the spring water for general use. Nevertheless an allotment was made to sink an artesian well to the water shed which has its outlet at the springs. The well was bored to a depth of 400 feet, when an accident put a stop to further work at that point. The medical officer then on duty urged the piping of the water from the springs as being feasible and not expensive, and the construction of cisterns to utilize the rainfall, in both of which recommendations he was sustained by the medical director, but the contractors meanwhile recommenced drilling at another point. Meanwhile also, on account of sickness at the post, attributed to the well water, a communication was sent by the Surgeon-General to the Secretary of War recommending that steps be taken to secure a continuous supply from Caddo Springs. The post commander directed the closure of the well. This officer, it may be stated, agrees with the post surgeon and medical director that a good supply of pure water can be had from Caddo Springs.

In February of this year it was learned that the artesian boring had reached a depth of 1,220 feet, and that, as the director of the Geological Survey had officially stated there was a possibility of getting water at this point, the necessary expenditure for sinking 500 feet deeper was authorized. This boring appears to have been a great mistake. It would have been much better to have piped from Caddo Springs, or even to have dug a well in the river bottom above the post.

San Carlos, Ariz.—The supply is from a well 8 by 8 by 34 feet in the river bottom. It gives a daily flow of 144,000 gallons in winter and 45,000 gallons in summer. It is pumped into a 19,000-gallon tank and distributed by gravity. The quantity used daily equals the summer capacity of the well, so that every day in that season it is pumped dry. The wooden tank is rotting and warping below, and so shrunken above that it can not be filled; the water runs out through the seams. The analysis of this water is given on page 134.

Fort Sheridan, Ill.—Some trouble was experienced during the winter by the blocking of the intake by ice. The post surgeon urged this as another argument in favor of carrying the intake further into the lake. Water drawn in March from one of the faucets in the hospital was decidedly impure.*

Fort Stanton, N. Mex.—The water is derived from a well 23 feet deep and 3 feet in diameter, situated only 20 yards from the Rio Bonito, a small stream subject to floods in certain seasons, but dry during late summer and autumn. It is pumped into a distributing reservoir at the rate of 4,000 gallons an hour at one time without making any change in the water level, while at another the supply becomes inadequate for the needs of the post. The water is hard, and has on several occasions been accused of occasioning dysenteric troubles. Two years ago a well was sunk to the depth of 93 feet, when the attempt was given up, as the supply obtained was not worth pumping. Subsequently, in 1892, it was proposed to dig another well of larger diameter, and money was allotted for this purpose; but in the mean time a proposition by a citizen of the neighborhood to drill a well not less than 150 feet deep, which would give 15,000 gallons every twelve hours, was accepted. Work is now in progress on this well.

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* See analysis, p. 134.

Fort Warren, Mass.—The deficiency of water at this post will soon be remedied by connection with the system of Boston by an extension of the 6-inch main which now supplies Gallope's Island.

Fort Washakie, Wyo.—Complaint was made of the quality of the water supply from the South Fork of Little Wind River; but on examination the water was found to be that of a pure mountain stream.*

Fort Wingate, N. Mex.—The water of the Ojo del Oso at this post was examined during the year.* Maj. W. Matthews reports as follows concerning it:

> This spring has long been a noted locality in New Mexico, and before the establishment of a garrison here the beautiful grove that surrounded it was a favorite camping ground for freighters and travelers. Its existence determined the location of this important garrison.
>
> The spring gushes from the foot of the Zuñi Mountains, 140 yards behind and south of the rear of the line of officers' quarters at Fort Wingate; it is shaded by oak, cedar, and willow trees of unusual size and undoubtedly of great age. Its altitude above the sea is almost exactly 7,000 feet. It discharges water at the rate of about 170 gallons per minute. This supply is not only ample for all the domestic and hygienic needs of the post with its system of pipe supply and sewerage, but it keeps green many lawns in front of the hospital and officers' quarters and serves to irrigate the post garden of about 20 acres. No doubt if it were necessary to cultivate a larger garden here the water could be made to cover more ground. The vegetables raised in this garden by means of the abundant water draw first prizes every year at the Territorial agricultural fair.
>
> This spring is but one of several springs of similar character which surround the Zuñi Mountains and make agricultural settlements possible at different places around their base. It probably draws its supply originally from the rains and snows of these mountains, which rise to heights of 8,000 and 9,000 feet, are covered with heavy pine forests, and receive abundant precipitation both in summer and winter. But it is reasonable to suppose that the spring finds its more immediate source in very deep strata of these mountains, for the volume of its water is invariable from month to month and from year to year—the wettest seasons do not increase and the dryest seasons do not diminish it.
>
> There is a core of granite in the center of the Zuñi Mountains, but the outer slopes consist largely of limestone and calcareous sandstone, the latter often highly colored and showing evidences of the plentiful presence of iron. These stratified rocks no doubt part with much of their substance to the water and load it with its notably abundant earthy constituents.
>
> It is very hard water. It deposits in a short time deep incrustations on the inside of all vessels in which it is boiled. It is unfavorable to the uses of the laundry and tends to roughen the skin of those who wash in it.
>
> For most persons I believe it to be a healthy water to drink; but I have had several cases of lithiasis and irritable bladder which seemed to be aggravated by it and were ameliorated by the use of distilled water or of Bethesda water or other water imported from the East.
>
> There is no reason to suppose that in its underground course this water can be subject to any important organic contamination, and the portion used here for drinking purposes is well protected after it issues from the ground. The natural outlet is covered by a house, which is locked. From this the water passes through an iron pipe to a small stone reservoir, which is also housed and kept under lock and key. Close to the reservoir is the steam pump which forces the water up to the top of

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* See page 134.

neighboring hill high above all the buildings in the garrison. Here the water is stored in a large stone reservoir, which is thoroughly protected with a substantial and well-ventilated house. The pipes of the post are supplied from this large reservoir. The overflow from the smaller reservoir near the spring passes into the irrigating ditches to water lawns and gardens.

There is only one house—a set of officers' quarters—at the post built at a higher level than the spring; but this house is about 125 yards from the spring, and is separated from it by a prairie.

Fort Yellowstone, Wyo.—Capt. C. M. Gandy reports, concerning the new supply at this post, as follows:

The "new post" is supplied with water from Clematis Creek, a mountain stream, a reservoir being formed by a dam thrown across it shortly before its emergence from the ravine down which it flows. Extending from this reservoir to the northwest corner of the post is a cast-iron 4-inch main, boxed and laid 6 feet below the surface. This main has a fall of 128 feet between the points named. At the corner of the post the main branches, each branch retaining the original diameter of the main. The branch in front of the quarters and storehouses is for fire purposes, having no connection with any buildings, but having on it six 3-inch fire hydrants, from one of which the sewer is flushed through the medium of a 3-inch hose and the first manhole. On a line with the rear of the officers' quarters the northern branch is tapped by a 3-inch iron galvanized service pipe from which individual set of quarters receives a branch, each house pipe being provided with a "stop and waste cock." In the same manner the barracks washroom and men's closets are supplied and the like pipe taps the main to supply a trough in rear of the cavalry stables. There is no water in either of the barracks kitchens or noncommissioned staff quarters, the former drawing its supply from the cock in the washroom and the latter from an outdoor hydrant near the dead end of the main. On this branch are three fire hydrants in apposition, respectively, to the barracks, the stables, and the noncommissioned staff quarters. There is no record of any analysis of the water. and while possessing considerable hardness, both temporary and permanent, it is believed to be of good quality. It probably produces mild intestinal disorders in persons unaccustomed to its use. The reservoir being unprotected by a fence, it is possible that its use as a drinking place by animals, both wild and domestic, may become a source of contamination; it is not believed that this has occurred to any great extent thus far. Both the amount of supply and storage capacity are ample.

Camp Lamont, Jackson Park, Chicago.—The medical officer at this camp invited attention to the impure water supply derived from Lake Michigan, the sewage contamination of which is notorious. The representation was made that a large sewer emptied into the lake at each end of the fair grounds, and the sewage of the park itself was returned to the lake after only 60 per cent of its organic matter had been removed. The intake was 1 mile from the shore, but sewage had been traced as far as the crib. The water as supplied contained 500 to 1,200 bacterial colonies to the cubic centimeter. As the rules of the World's Fair authorities against fire did not permit of sterilization by boiling, and as the methods of filtration in use on the grounds could not be trusted to remove infection from the water, another source of water supply was imperative, particularly as it was understood that the military cadets were to form part of the garrison. Typhoid fever would have been as prone to occur among them under the conditions of their encampment on the fair grounds as among a regiment of raw troops during time of war. Outbreaks of this fever were of too frequent occurrence during the war of the rebellion; but enough is now known concerning their causation to enable us in many instances to prevent them. The proposition of the commanding officer to introduce a supply of Hygeia water was therefore earnestly indorsed by this office.

Tabulation of analytical notes.

Water sample.	Total solids.	Chlorine.	Ammonia.		Oxygen by permanganate.	Nitrites.	Nitrates.	Remarks.
			Free.	Albuminoid.				
Fort Adams, R. I.:								
East well		2.24	.021	.017	.324	Present.	Present.	Use not authorized.
West well		2.2	.005	.0075	.104	Traces.	Present.	
Newport supply		2.7	.003	.020	.500	None.	Trace.	
Fort Barrancas, Fla.:								
Spring	10.0	1.0	.006	.003		None.	None.	Coloration on ignition slight and evanescent.
Artesian well	3.0	1.4	.016	.002		None.	None.	
Fort Bliss, Tex.:								
East well	34.4	2.4	.002	.002	.028	Present.	Trace.	Total hardness, 14°; permanent, 10°.
West well	44.4	3.3	.002	.002	.024	Present.	None.	Total hardness, 21.5°; permanent, 12.5°.
Fort Clark, Tex.:								
Distributing pipes		1.3	.001	.002	.048	Trace.	Present.	The traces of nitrous acid reported as very faint.
Center of pool		1.3	.009	.005	.064	Trace.	Present.	
Margin of pool		1.3	.010	.0055	.084	Trace.	Present.	
Brackettville wells	60.0	6.5	None.	.003	.072	Trace.	Present.	
Fort Douglas, Utah:								
Reservoir	38.0	1.7	None.	.002	.018	None.	None.	Organically pure.
Hospital delivery	42.0	1.7	None.	.0025	.016	None.	None.	
Madison Barracks, N. Y.:								
Barrack tap		.17	.0037	.018	.74		.01	Use not authorized.
		.22	.0039	.019	.70		.01	
Intake well		.16	.006	.034			.01	
Proposed intake	12.2	.5	None.	.007	.324	None.	None.	
Henderson Bay	13.0	.5	None.	.007	.240	None.	None.	
Fort Meade, S. Dak:								
Spring nearest creek	46.6	.4	.0145	.005	.180	None.	None.	Total hardness, 28°; permanent, 21°.
Hospital supply	46.6	.4	.015	.005	.112	None.	None.	Total hardness, 30°; permanent, 22°.
Creek below sewer	11.7	.4	.0095	.012	.68	None.	Present.	Total hardness, 11.5°; permanent, 10°.
Presidio of San Francisco, Cal.:								
Lobos Creek supply	27.0	2.4	.002	.004				
Cemetery well	40.9	6.7	.004	None.		None.	None.	
San Carlos, Ariz.:								
Well	65.0	17.2	.003	.0025		None.	None.	Total hardness, 42°; permanent, 17°.
Hospital delivery	64.5	17.2	Trace.	.0045		None.	None.	
Fort Sheridan, Ill	11.0	.4	.0055	.0035	.340	Present.	Traces.	
Fort Washakie, Wyo:								
River water		1.1	.003	.0055	.128	None.	None.	
Well at Trader's store		1.3	.0055	.0105	.132	None.	None.	Use of this water not authorized.
		1.3	.007	.017	.132	None.	None.	
Fort Wingate, N. Mex:								
Ojo del Oso	58.0	1.0	.002	.005	.076	None.	None.	Total hardness, 31.5°; permanent, 29°. Mineral constituents in grains per gallon: lime, 11.954; magnesia, 2.015; sulphuric acid, 12.820; carbonic acid, 5.240.

FOOD.

The food supply has been reported ample in quantity and of excellent quality. The few exceptional cases in which some article of the supply is made the subject of unfavorable criticism serve merely to emphasize the excellence of this provision for the well being of the soldier. Moreover, it will be seen that most of the references to inferior quality have their origin in the naturally poor condition of western beef cattle at certain seasons. Fort Grant, Ariz., is the only post from which any general complaint was received. Three medical officers were successively in charge during the year, and each felt called upon to invite attention to faults in the food supply. One in July and another in August took exception in strong terms to the butter on hand for sale. Some accidental contamination in storage appears to have been the occasion of these complaints, as the butter is said to have been so strongly flavored with kerosene oil as to be unfit for use. The post commissary of subsistence made suitable recommendation in the case, and as no further unfavorable mention was made it is assumed that the evil was remedied. The quality of the flour was challenged in August, and it was stated that there was a general outcry against the bread. To this the officer on duty as post treasurer replied that a different grade of flour would be received soon, and that the bread had been spoiled in only one instance, and this from careless handling after issue and not from any fault of the baker or defect in the flour. In February the potatoes were represented as so fungus spotted as to involve great waste and consequent shortage in preparing them for the table; in April they were reported as sprouting, and in May as small, shriveled, and of inferior quality. The onions issued in May shared in this adverse criticism.

The chief complaint, however, at this post was against the beef, which was repeatedly reported tough, lean, and with an undue proportion of bone. Similar reports came from other posts in the West, as Whipple Barracks and Forts Bowie, Buford, Clark, and Niobrara, Camp Poplar River, and Forts Ringgold, Stanton, and Supply. The sterile ranges in the vicinity of these posts fail, particularly at certain seasons, to afford the grazing needful to the production of good beef. While characterized as lean, tough and stringy, the meat is usually acknowledged to be as good as is afforded by the neighboring ranges. Beef cattle killed by contractors have ordinarily not dressed more than 350 pounds, and cattle of that size necessarily have a larger proportion of bone than animals in good condition. Contracts provide specifically for good beef, and for procuring it in the open market if the contractor fails to furnish what the contract requires; but the open market usually offers only the same range-fed beef. At Forts Supply and Clark recommendation was made that the contract should provide for stall-fed cattle, at least during certain months of the year, but it is understood that this did not meet with the approval of the Commissary-General of Subsistence. At Whipple Barracks and Fort Niobrara purchases of beef had to be made by the companies to supplement their ration.

The flour issued at Whipple Barracks was reported in April as dark in color and apparently deficient in gluten. At Fort Myer, in the same month, the bread was bad on account of inferior flour. Three samples examined by the post surgeon contained only from 5¾ to 7 per cent of gluten; a fourth sample yielded 12¾ per cent. The flour in the barrels from which the poor samples were taken had a musty odor and sour taste. Bread made during the following month was of better quality, as the use of the defective flour was avoided. Bread of inferior quality at Fort Bayard in September, Fort Thomas in January, and Fort Ringgold in February, was apparently due to faults in baking.

The potatoes issued in September at Fort Clark, and in December and January at Alcatraz Island, were of inferior quality, watery, and decaying. At Forts Stanton and Supply they were soft and shrunken, evidently as a result of frost. The intention of the commanding officer at Fort Columbus, as expressed in the sanitary report for May, to place the potatoes furnished for issue before a board of survey unless there was an immediate improvement in the quality of those furnished by the contractor, appears to have sufficed to secure potatoes, "good and wholesome in quality and condition," in conformity with the terms of the contract.

The post surgeon of St. Francis Barracks represented that in the warm season a ration consisting of 80 per cent Irish potatoes was unsatisfactory and wasteful, as these tubers became waxy or decayed. At the same time an abundance of cheap and wholesome vegetables of local growth was to be found in the markets. In view of these representations, authority was given for the issue at this post, during the period from March 1 to August 31, of 40 per cent of common potatoes, 30 of sweet potatoes, and 30 of other vegetables of wholesome quality procurable in the neighborhood, such as onions, carrots, beets, turnips, cabbages, squashes, and string beans.

The following suggestions by Capt. P. Clendenin, Fort Brady, Mich., are of interest:

> There is a point about the consolidated mess that is very unsatisfactory, and which, it seems to me, should be remedied, and that is the serving of the food. In many instances it is cold before being placed before the men; the distance it is carried is considerable, and by the time the meat, for instance, is carved and distributed it is cold. This difficulty could be obviated by using a hot carving table such as is frequently seen in city restaurants and hotels. If it is not thought feasible to purchase one, it seems to me one could be made at the post. A table could be made with a top of steam pipes, connected with the steam-heating plant; this would be simply a sort of horizontal radiator. The objection to this would be that it would only be serviceable during the winter months, when steam was on in the building; still steam will no doubt be used during eight months of the year; but, on the other hand, the apparatus should be in working order the year around. I had thought to recommend this scheme, to be supplemented by an arrangement for heating the table by oil or other burning fluid, but all these make odors or are unsafe.
>
> A most practicable scheme has seemed to me to be the use of hot water from the separate heater in the kitchen; the circulation can be kept up by return pipes placed in the same manner that the circulating pipes are arranged between the reservoirs and the bath rooms in the officers' quarters here. If this is not desirable, a table could be constructed with a top which is a closed reservoir of 6 inches depth and the requisite length and width, like an immense oyster can, and let this be filled with water at near the boiling point; this could be filled simply by turning a faucet if the water were piped from the heater, and the water could afterwards be used for dish washing or scrubbing if desired. Whatever scheme is thought best should be arranged before any more men are messed here. There is another suggestion I have to make in this connection, and that is, that rubber-tired wheel carts to carry the food in from the kitchen would be a very great convenience, as with them it would be possible to serve the food much more quickly and in better condition than at present. These carts might be large trays with a tin cover, or might be something similar to the ovens used by caterers in cities; they would not require any means of heating, however, if they were heated before the food was introduced.

CLOTHING.

Medical officers generally appear to be satisfied with the clothing of the men, as unfavorable criticism has been exceedingly rare. Those stationed at Camp Eagle Pass and Key West Barracks desire a lighter quality of woolen underwear for the men. J. Y. Porter, M. D., attending physician at the latter station, holds that his long professional experience in that climate has demonstrated the necessity for wool as a texture for underwear; but the articles should be of light weight, otherwise they will be uncomfortable and irritating. He considers that "feather-weight" all-wool undershirts and drawers would not be any more expensive of purchase than those now furnished, and would more decidedly conduce to the health and comfort of the men. He thinks it likely that if light woolen articles are not provided the men will purchase for themselves the cheap gauze stuff which does not possess the property of preventing rapid evaporation from the body when bathed with perspiration, and which, consequently, tends to the production of those diseases that arise from chilling of the surface.

On the other hand, the post surgeons at Forts McPherson and Brady take exception to the drawers issued as lacking in the necessary warmth for winter wear. Col. B. J. D. Irwin, Assistant Surgeon-General, characterizes the issue at Fort Brady as unsuitable, inasmuch as it is too light for winter and too rough for summer wear, the drawers and undershirts especially so; and Capt. P. Clendenin protests against the use of cotton drawers at this post. "The underclothing should be of wool and of good quality to protect a man on guard duty when the temperature falls at night to—30° Fahr." It is understood that thick woolen drawers are now supplied to the troops in northern Dakota.

One medical officer compared the weight of the officers' helmet with trimmings (11¾ ounces), with that of the enlisted men (5 ounces), and suggested the use of the latter by everyone as a sanitary measure in hot climates.

A few medical officers have reported that the cloth of the dark blue trousers furnished to the men of the Hospital Corps loses its color, wears white, and soon looks shabby; and one officer criticises in like manner the coats of the men of the companies, stating that they fade on the right breast where the rifle bears in the position of right shoulder arms.

I have already recommended the use of white linen or cotton duck for men of the Hospital Corps on ward, dispensary, and other indoor duties.*

HABITS, CLEANLINESS, ATHLETIC EXERCISES, ETC.

The habits of the men are generally reported good. At some posts, as Fort Grant, reference is made to the evil influence of low resorts bordering on the reservation, where drunkenness and prostitution impair the morals of the men. Similar resorts in cities near military stations do equal harm to the troops. The remarks submitted in presenting the data relating to the prevalence of venereal diseases and alcoholism give a statistical expression to the habits of the men in this view of the question. The bad habits of the Indian companies have already been reported, pages 63 and 103.

With these exceptions the habits of the men must be regarded as good. They are clean in person and clothing and soldierly in bearing. At a few posts the facilities for bathing continue to be somewhat defective, but much has been effected of late in bettering them. The poorest arragements are probably to be found at Camp Eagle Pass, where the bath house, a hospital tent pitched in an arroya, is furnished with only one tub. Some barrels are arranged to give a shower, and this is preferred by the men to the tub. In summer scarcity of water, and in winter the coldness of the weather, prevent regular bathing at this post. Some of the men are therefore wanting in respect to cleanliness of person, and skin diseases are said to have resulted.

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* See page 17.

The laundry work of the men is usually carried on by the wives of married soldiers living in or near the garrison, or by laundrymen in the neighboring civil communities. At Fort Logan some Chinamen occupy an old wooden building and do the greater part of the washing for the companies. They have a boiler of 40 gallons capacity, a stove, and a few tubs; but the water has to be hauled in barrels and there is no sewer connection, waste water flowing along an open ditch into a neighboring ravine. At Jefferson Barracks laundry work is done by a force of 5 men and 8 women at a steam laundry having an engine of 36-horse-power, with tubs, mangles, wringers, etc. This laundry is managed by the depot quartermaster, and its charges fixed by the council of administration of the station. This method of doing the work deserves attention, particularly in view of danger from cholera or specific febrile diseases. Maj. J. Van R. Hoff urged the establishment of a post laundry at Fort Riley to render the post independent of the civilian community of Junction City. He reported in September:

> A most intimate connection with the neighboring town and great source of danger arises from the necessity this command labors under of having its laundry work done there. Referring to this in its relation to cases of scarlet fever occurring here, I had the honor to state in my sanitary report for April, 1892, as follows: "These germs (scarlatina) are invited into the garrison chiefly through the instrumentality of the clothing of the command, which is sent to Junction City to be laundered. So long as the necessity for this remains, and it is now a necessity, so long will a gate continue wide open for the entrance of any infectious diseases which may manifest themselves in the neighborhood. There is but one remedy for this condition, the establishment of a laundry at the post." This recommendation gains importance in connection with the approach of cholera, and no steps should be left untaken to carry it out.

Little has been said on the subject of the post exchange during the year, but all the reports concerning it indicate a change of views. Medical opinion, at first generally in favor of the institution as tending to lessen the frequency of intoxication, appears of late to doubt the soundness of its earlier conclusions. Many medical officers now consider that the comparative infrequency of absolute intoxication is offset by the facilities afforded to young men to indulge in beer drinking. They are of opinion that old men habituated to the use of distilled liquors will not be satisfied with beer, but will get whisky at other places than the post exchange, while young men who would not leave their barracks for intoxicants of any kind are led into bad habits by the ease with which beer may be obtained and the official sanction given to its use. In the following paragraphs Maj. C. K. Winne gives excellent expression to this view of the influence of the post exchange as now conducted:

> The original idea of the canteen, based upon analogous institutions in some European armies, was an excellent one; that is, to open to men off duty a pleasant, warm, lighted room away from the barracks where they could read, smoke, play cards, or purchase little necessaries or light refreshments, though the latter is not such as essential in this service as it is abroad. There the men have small pay and as a rule an insufficient ration which they are obliged to supplement by purchase. Here, on the contrary, the pay is comparatively large, the ration is ample, and the Subsistence Department now has for sale various extra toilet and other articles, which at one time could only be purchased at the post trader's, while the environment and conditions of the American soldier are in every respect far better than that of any class of men who rely upon manual labor for their subsistence.
>
> But the canteen as originally proposed, and which had much to commend it, has gradually been modified so that it is for all intents and purposes simply an author-

> ized beer saloon kept open under the auspices and with the approval of the Government.
>
> The old iniquities of the post-trader's system, with its extortion and intoxication kept under control, have happily passed away, and the question is: Is it desirable to take a retrograde step and continue the intoxication under control in another way? To substitute the quiet narcotism of beer for the active delirium of alcohol is merely to change the action of one poison for another; the use of either one or the other is followed by certain pathological sequences, more rapid and marked in the one case than in the other, but inevitable in both. It is a well-known surgical fact that those men whose bodies to a greater or less extent have undergone the physical degeneration induced by these agents are the most unsatisfactory and uncertain patients; they take anæsthetics badly, recover less rapidly from shock, respond less readily to stimulants when required, while the percentage of those who recover after operations or compound fractures is much less in this class of patients than it is among abstainers.
>
> It seems an anomaly that while on the one hand soldiers are retained in the condition of trained athletes, and their equipments and arms are those which least unfit them from being professional pedestrians, yet on the other hand they are furnished within the post limits with the most fruitful cause of bodily decay, the one thing that will unstring the muscles and befog their brains the soonest and most irretrievably.
>
> While it may not be possible to ascertain accurately whether or not offenses against discipline and courts martial have increased or decreased since the canteen system was established, and on this point there is a wide difference of opinion, yet there can be no doubt as to the fact that the present system, like the old, does encourage, foster, and often initiates the habit of frequent tippling. There is no doubt that many men, particularly the young men, who would either abstain or drink very seldom if to do so they had to leave the post, form the habit of early drinking, and steady all-day drinking, when the opportunities are so freely offered them in immediate proximity to their barracks, with the added association of their comrades. From the canteen the transition is easy to other places outside the limits of the garrison, where stronger drink and other temptations are offered.
>
> Many company commanders will dissent emphatically from the above statement, not only because the canteen profits swell the company funds and are expended in providing the company messes, but also because they consider it better for discipline to control their alcoholics by yielding somewhat to their tastes within the limits of the post; this reasoning, however, it may be submitted, is most fallacious.
>
> The Army ration is considered ample, and with the extra vegetables furnished by the Subsistence Department should supply all the needs of healthy men with good appetites; but if it is insufficient, then the lacking constituents of a good dietary should be supplied by the Government, and not be taken from the pockets of one-half the command in beer money to fill the stomachs of the other half. As these intoxicants are not needed as accessory foods it is neither good morals nor good physiology to permit or encourage their use. If it is desirable to permit the indulgence of or to supervise one vice to a certain extent, then it naturally follows that other vices should be placed in the same category; and there is no logical reason why every post should not be provided with a detachment similar in kind to that famous corps which Brantome describes as accompanying the picked column of the Duke of Alva in his celebrated march to invade the Netherlands: "De plus il y avoit quatre cens courtezanes à cheval, belles et braves comme princesses, et huit cens à pied bien à point aussi."

An idea may be formed of the influence of the post exchange on the messing of the men from the statement that at Columbus Barracks, during the period June 1, 1892, to March 31, 1893, the exchange contributed the sum of $3,005.65 to the mess fund. This was expended chiefly for potatoes, meats, sausages, and dried fruits. The average number of men in the mess was 500.

The following remarks of Dr. J. Y. Porter, on the influence of individual habits on health, although written for the benefit of the garrison of Key West Barracks, are equally applicable to troops at any station:

> Having no special comments to make on the sanitary condition of the post and the health of the command (which has been good) for the past month, the thought suggests itself that some recommendations indicating how to keep well, particularly during the hot months, might prove serviceable. Excluding the causes whic produce the contagious epidemic diseases, and from which there seems no occas to fear, owing to the stringent regulations of the State health authorities, the m tenance of health depends mainly upon the ability and inclination of the indivi

APPENDED PAPERS.

STATISTICAL TABLES.

TABLE I.—*A numerical view of the effects of disease and injury on the Army during the calendar year 1892, as compared with the corresponding data for 1891 and for the decade 1881–'90.*

United States Army.	White.	Colored.	Indians.	Total.
Average strength as shown by returns of the Adjutant-General	*23,877	*2,201	*783	*26,861
as shown by reports of the Medical Department	†21,437	†2,036	†730	†24,203
All admissions to sick report during the year	27,299	2,561	888	30,748
treated in hospital	13,664	1,403	348	15,415
treated in quarters	12,938	982	525	14,445
treated in field	697	176	15	888
Ratios of all admissions per 1,000 of mean strength	1,273.45	1,257.86	1,216.44	1,270.42
for the previous year	1,337.70	1,577.03	1,797.30	1,364.78
for the preceding decade	1,442.02	1,625.16	....	1,459.65
Admissions for disease	22,011	1,967	653	24,631
ratios per 1,000 of mean strength	1,026.78	966.11	894.52	1,017.68
for the previous year	1,096.23	1,266.47	1,452.70	1,115.86
for the preceding decade	1,201.83	1,333.36	....	1,214.49
Admissions for injury	5,288	594	235	6,117
ratios per 1,000 of mean strength	246.68	291.75	321.92	252.74
for the previous year	241.47	310.56	344.59	248.91
for the preceding decade	240.19	291.80	....	245.16
Ratios per 1,000 of mean strength of cases treated in hospital	637.41	689.10	476.70	636.86
of cases treated in quarters	603.54	482.32	719.18	596.83
of cases treated in field	32.51	86.45	20.55	36.69
Number constantly noneffective during the year	850.84	78.49	29.17	958.51
ratios per 1,000 of mean strength	39.69	38.55	39.97	39.60
ratios for the previous year	41.65	44.12	52.36	42.01
ratios for the preceding decade	43.31	44.35	....	43.41
Number of days lost on account of sickness during the year	311,409	28,728	10,678	350,815
average for each man of the Army	14.5	14.1	14.6	14.5
for the previous year	15.2	16.1	19.1	15.3
for the preceding decade	15.8	16.2	....	15.9
Average number of days each case was treated	11.4	11.2	12.0	11.4
for the previous year	11.4	10.2	10.6	11.2
for the preceding decade	11.0	10.0	....	10.9
Average days treatment for patients discharged for disability	87.9	90.8	64.6	86.8
who died	31.8	44.8	33.6	32.9
Number of discharges for disability	436	32	25	493
ratios per 1,000 of mean strength	18.26	14.54	31.93	18.35
for the previous year	17.24	19.10	3.19	17.23
for the preceding decade	30.62	31.37	....	30.70
Number of discharges for disease	383	30	22	435
ratios per 1,000 of mean strength	16.04	13.63	28.09	16.20
for the previous year	14.23	18.66	3.19	14.47
for the preceding decade	27.23	26.87	....	27.20
Number of discharges for injury	53	2	3	58
ratios per 1,000 of mean strength	2.22	.91	3.83	2.16
for the previous year	3.01	.44	....	2.76
for the preceding decade	3.39	4.50	....	3.50
Number of deaths from all causes	146	11	16	173
ratios per 1,000 of mean strength	6.11	5.00	20.43	6.44
for the previous year	6.16	7.11	6.39	8.05
for the preceding decade	8.57	10.42	....	8.75

* Used in computing the ratios of deaths and discharges for the whole Army.

† Used in computing all ratios for the Army except those of deaths and discharges

TABLE I.—*A numerical view of the effects of disease and injury on the Army during the calendar year 1892, etc.*—Continued.

United States Army.	White.	Colored.	Indians.	Total.
Number of deaths from disease	101	7	9	117
ratios per 1,000 of mean strength	4.23	3.18	11.49	4.[illegible]
for the previous year.	4.98	5.78	3.19	[illegible]
for the preceding decade	5.66	7.26	....	5.[illegible]
Number of deaths from injury	45	4	7	56
ratios per 1,000 of mean strength	1.88	1.82	8.94	2.[illegible]
for the previous year.	3.18	1.33	3.19	3.[illegible]
for the preceding decade	2.91	3.16	....	2.[illegible]

TABLE II.—*The relative sickness among the troops, white, colored and Indian, in the various military departments during the year 1892.*

Army, by departments.		Mean strength of command.	Admissions.						Admission rate per 1,000 of mean strength.	Troops per 1,000 of mean strength constantly noneffective from sickness.
			Quarters.	Hospital.	Field.	Disease.	Injury.	Total.		
East	W..	6,399	4,952	4,706	43	8,181	1,520	9,701	1,516.02	42.42
	C...	149	84	152	......	193	43	236	1,583.89	47.62
	I...	65	36	49	......	55	30	85	1,307.69	45.44
	T...	6,613	5,072	4,907	43	8,429	1,593	10,022	1,515.50	42.[illegible]
Missouri	W..	3,982	2,465	2,481	48	4,027	967	4,994	1,254.14	35.63
	C...	136	29	130	......	117	42	159	1,169.12	41.91
	I...	60	64	10	......	65	9	74	1,083.33	35.[illegible]
	T...	4,178	2,558	2,621	48	4,209	1,018	5,227	1,251.08	35.84
Dakota	W..	2,340	1,739	1,191	65	2,325	670	2,995	1,279.91	40.24
	C...	698	418	451	5	674	200	874	1,252.15	36.[illegible]
	I...	195	170	89	......	185	74	259	1,328.20	56.14
	T..	3,233	2,327	1,731	70	3,184	944	4,128	1,276.83	40.[illegible]
Platte	W..	2,919	1,154	1,673	213	2,360	680	3,040	1,041.45	31.[illegible]
	C...	429	116	305	133	401	153	554	1,291.38	28.[illegible]
	I...	223	122	127	11	214	46	260	1,165.92	35.02
	T..	3,571	1,392	2,105	357	2,975	879	3,854	1,079.25	31.74
Texas	W..	1,477	751	1,293	116	1,739	421	2,160	1,462.42	34.[illegible]
	C...	4	......	3	......	3	......	3	750.00	8.[illegible]
	T..	1,481	751	1,296	116	1,742	421	2,163	1,460.51	54.25
Arizona	W..	1,651	1,085	972	75	1,681	451	2,132	1,291.34	42.74
	C...	617	335	361	38	578	156	734	1,189.63	42.[illegible]
	I...	162	121	50	4	112	63	175	1,080.25	27.44
	T..	2,430	1,541	1,383	117	2,371	670	3,041	1,251.44	41.[illegible]
California	W..	1,300	404	756	79	919	320	1,239	953.07	32.16
	T..	1,300	404	756	79	919	320	1,239	953.07	32.16
Columbia	W..	1,339	388	573	58	760	259	1,019	761.02	27.75
	I...	25	12	23	......	22	13	35	1,400.00	34.[illegible]
	T..	1,364	400	596	58	782	272	1,054	772.73	27.88
Hot Springs, Ark.	W..	30	......	19	......	19	......	19	......	......
	C...	3	......	1	......	1	......	1	......	......
	T..	33	......	20	......	20	......	20	......	......
At large: Miscellaneous deaths and discharges.	W..	......	......	......	......	......	......	......	......	......
	T..	......	......	......	......	......	......	......	......	......
Total for the Army.	W..	21,437	12,938	13,664	697	22,011	5,288	27,299	1,273.45	39.[illegible]
	C...	2,036	982	1,403	176	1,967	594	2,561	1,257.86	38.[illegible]
	I...	730	525	348	15	653	235	888	1,216.44	29.[illegible]
	T..	24,203	14,445	15,415	888	24,631	6,117	30,748	1,270.42	39.[illegible]

TABLE II.—*The relative sickness among the troops, white, colored and Indian, in the various military departments during the year 1892*—Continued.

Army, by departments.		Deaths.	Annual death rate per 1,000 of mean strength.	Discharged for disability.	Annual discharge rate per 1,000 of mean strength.	Average duration of treatment among patients.		Death rate per 1,000 of admissions.	Discharge rate per 1,000 of admissions.	Recoveries per 1,000 of admissions.	Average sick daily.	Average duration of treatment among all admissions.
						Who died.	Who were discharged for disability.					
East	W..	48	7.50	116	18.13	21.8	73.2	4.95	11.96	971.24	271.89	10.24
	C...	1	6.71	5	33.56		45.2	4.24	21.19	966.10	7.10	11.00
	I...	5	76.92			41.0		58.83		953.00	2.95	12.72
	T..	54	8.17	121	18.30	23.6	72.2	5.39	12.07	972.10	281.44	10.28
Missouri	W..	23	5.78	62	15.75	23.8	79.9	4.61	12.41	972.17	141.90	10.40
	C...									949.69	5.69	13.09
	I...	1	16.67	3	50.00	57.0	70.3	13.51	40.54	891.89	2.16	10.67
	T..	24	5.74	65	15.56	26.6	79.4	4.59	12.43	970.34	149.75	10.48
Dakota	W..	14	5.98	43	18.37	26.2	81.0	4.67	14.36	969.62	94.16	11.51
	C...	3	4.30	11	15.76	47.3	81.1	3.43	12.59	980.55	25.17	10.54
	I...	1	5.13	11	56.41	77.0	57.5	3.86	42.47	969.11	10.94	15.46
	T..	18	5.57	65	20.10	34.3	76.8	4.36	15.74	971.90	130.27	11.55
Platte	W..	14	4.80	31	10.62	68.7	119.9	4.61	10.12	972.70	93.16	11.22
	C...	4	9.32	2	4.66	17.0	48.0	7.22	3.61	994.58	12.34	8.15
	I...	4	17.94	11	49.33	2.0	70.8	15.38	42.31	926.92	7.81	10.99
	T..	22	6.16	44	12.32	50.2	105.8	5.71	11.42	972.76	113.32	10.76
Texas	W..	17	11.51	41	27.76	60.9	73.1	7.87	18.98	946.30	80.32	13.61
	C...									666.67	.04	4.33
	T..	17	11.48	41	27.68	60.9	73.1	7.86	18.96	945.91	80.35	13.60
Arizona	W..	12	7.27	41	24.83	12.9	66.2	5.63	19.23	950.28	70.24	12.06
	C...	3	4.86	12	19.45	70.0	88.7	4.13	16.35	989.10	26.27	13.10
	I...	5	30.86			12.0		28.57		948.57	4.45	9.30
	T..	20	8.23	53	21.81	23.4	72.1	6.58	17.43	959.55	100.95	12.15
California	W..	5	3.85	21	16.15	5.7	51.4	4.04	16.95	954.00	40.23	11.88
	T..	5	3.85	21	16.15	5.7	51.4	4.04	16.95	954.00	40.23	11.88
Columbia	W..	5	3.73	25	18.67	11.3	128.4	4.91	24.53	963.69	37.16	13.35
	I...									885.70	.87	9.09
	T..	5	3.67	25	18.33	11.3	128.4	4.74	23.72	966.79	38.03	13.20
Hot Springs, Ark	W..	1		21		219.0	203.8					
	C...			2			264.5					
	T..	1		23		219.0	209.0					
At large:												
Miscellaneous deaths and discharges.	W..	7		35		25.5						
	T..	7		35		25.5						
Total for the Army.	W..	146	6.11	436	18.26	31.8	87.9	5.35	15.97	967.51	850.84	11.41
	C...	11	5.00	32	14.54	44.8	90.8	4.30	12.49	989.07	78.48	11.22
	I...	16	20.43	25	31.93	33.6	64.6	18.02	28.15	948.20	29.18	12.02
	T..	173	6.44	493	18.35	32.9	86.8	5.63	16.03	968.74	958.51	11.41

TABLE III.—*Military posts in each department, alphabetically arranged, with mean strength, admissions for disease and injury, also deaths and discharges, with ratios per thousand of strength for admissions, and noneffectiveness, the averages of daily sickness, and meteorological data for 1892.*

DEPARTMENT OF THE EAST.

Names of stations.	Mean strength.	Cases.			Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharges for disability.	Deaths.	Altitude of stations.	Temperature.			Total precipitation.
		Disease.	Injury.	Total.							Mean.	Maximum.	Minimum.	
										Feet.				In.
Fort Adams, R. I	248	207	73	280	1, 129. 03	8. 09	32. 62	2	3	30	49. 3	93	— 1	43.45
Allegheny Arsenal, Pa	32	36	7	43	1, 343. 75	1. 79	56. 01	1	1	704	52. 1	96	2	32.06
Augusta Arsenal, Ga	27	10	.....	10	370. 37	. 46	17. 20	....	1	600	63. 0	97	23	39.27
Fort Barrancas, Fla	75	122	27	149	1, 986. 67	5. 30	70 64	2	...	30	67. 0	94	23	44.02
Columbia Arsenal, Tenn	19	47	3	50	2, 631. 58	1. 62	85. 42	....	1	.....	.....	.....	.....	.....
Columbus Barracks, Ohio	591	1, 103	114	1, 217	2, 059. 23	42. 54	71. 98	8	7	740	51. 3	97	— 3	[illegible]
Fort Columbus, N. Y	244	170	29	199	815. 57	9. 35	38. 31	3	1	25	.....	.....	.....	.....
Davids Island, N. Y	555	975	199	1, 174	2, 115. 32	25. 71	46. 31	6	2	30	.....	.....	.....	.....
Frankford Arsenal, Pa	40	27	1	28	700. 00	1. 30	32. 51	....	2	50	53. 5	101	10	34.78
Fort Hamilton, N. Y	262	521	96	617	2, 354. 96	12. 57	48. 04	5	1	47	.....	.....	.....	.....
Jackson Barracks, La	106	154	21	175	1, 650. 94	6. 10	57. 51	8	1	10	68. 1	93	23	56.[illegible]
Kennebec Arsenal, Me	15	20	3	23	1, 533. 33	. 32	21. 13	....	....	200	43. 7	93	—12	33.[illegible]
Madison Barracks, N. Y	333	296	73	369	1. 108. 10	11. 46	34. 40	9	4	262	.....	.....	—31	40.71
Fort McHenry, Md	160	173	36	209	1, 306. 25	8. 05	50 33	8	1	36	54. 1	99	12	45.[illegible]
Fort McPherson, Ga	399	571	81	652	1, 634. 09	23. 16	58. 04	7	3	1, 078	59. 6	94	13	49.[illegible]
Fort Monroe, Va	375	595	79	674	1, 797. 33	17. 02	45. 38	7	1	8	58. 4	99	19	49.24
Mount Vernon Barracks, Ala	181	267	62	329	1, 817. 68	9. 02	49. 81	6	8	155	.....	.....	.....	.....
Fort Myer, Va	236	278	104	382	1, 618. 64	9. 57	40. 55	6	3	200	54. 1	97	4	46.[illegible]
Newport Barracks, Ky	60	60	12	72	1, 200. 00	2. 02	33. 70	....	1	588	53. 3	98	2	31.[illegible]
Fort Niagara, N. Y	188	102	24	126	670. 21	5. 52	29. 37	3	1	271	46. 4	94	— 2	[illegible]
Fort Ontario, N. Y	61	49	10	59	967. 21	2. 03	33. 33	2	1	282	.....	.....	.....	.....
Plattsburg Barracks, N. Y	61	60	13	73	1, 196. 72	1. 56	25. 62	....	...	186	42. 7	98	—14	40.18
Fort Porter, N. Y	105	100	19	119	1, 133. 33	3. 77	35. 91	1	...	600	46. 3	88	— 2	45.57
Fort Preble, Me	57	55	15	70	1, 228. 07	2. 85	49. 94	3	...	38	45. 1	95	— 5	39.15
St. Francis Barracks, Fla	123	209	33	242	1, 967. 48	5. 61	45. 60	8	1	15	68. 2	94	29	39.[illegible]
Sandy Hook, N. J	52	87	11	98	1, 884. 62	. 99	19. 13	1	...	.....	.....	.....	.....	.....
Fort Schuyler, N. Y	98	95	28	123	1, 255. 10	3. 30	33. 68	1	3	25	.....	.....	.....	.....
Springfield Armory, Mass	24	8	3	12	500. 00	. 39	16. 05	....	...	250	48. 5	95	— 2	45.[illegible]
Fort Thomas, Ky	268	246	55	301	1, 123. 13	11. 31	42. 19	9	...	.....	.....	.....	.....	.....
Fort Trumbull, Conn	62	56	9	65	1, 048. 39	2. 30	36. 93	1	...	25	48. 8	92	— 2	34.75
Fort Wadsworth, N. Y	175	152	42	194	1, 108. 57	3. 59	20. 50	....	1	140	.....	.....	.....	.....
Fort Warren, Mass	115	56	14	70	608. 70	2. 55	22. 14	2	...	38	49. 4	96	0	37.[illegible]
Washington Barracks, D. C	332	595	63	658	1, 981. 93	14. 35	43. 22	4	1	106	54. 0	99	4	42.[illegible]
Watertown Arsenal, Mass	31	28	.....	28	903. 23	. 52	16. 75	....	...	100	.....	.....	.....	.....
Watervliet Arsenal, N. Y	55	70	11	81	1, 472. 73	3. 35	60. 96	1	...	50	.....	.....	.....	.....
West Point, N. Y	375	415	119	534	1, 424. 00	9. 60	25. 59	4	2	167	....	99	— 2	42.21
Willets Point, N. Y	376	353	84	437	1, 162. 23	11. 78	31. 33	3	2	80	51. 2	98	5	39.[illegible]
Fort Wood, N. Y	54	28	9	37	685. 19	. 25	4. 55	....	1	.....	.....	.....	.....	.....
Field	43	32	11	43	1, 000. 00	. 39	9. 15	....	...	.....	.....	.....	.....	.....
Total	6, 613	8, 429	1, 593	10, 022	1, 515. 50	281. 44	42. 56	121	54	....	.....	.....	.....	.....

DEPARTMENT OF THE MISSOURI.

Names of stations.	Mean strength.	Disease.	Injury.	Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharges for disability.	Deaths.	Altitude of stations.	Mean.	Maximum.	Minimum.	Total precipitation.
Fort Brady, Mich	117	87	21	108	923. 08	3. 35	28. 60	3	1	600	39. 1	90	—22	[illegible]
Chicago, Ill	52	9	1	10	192. 31	. 45	8. 72	....	...	661	46. 6	94	—10	36.[illegible]
Indianapolis Arsenal, Ind	25	37	5	42	1, 680. 00	. 87	34. 97	....	...	698	52. 0	97	— 5	39.[illegible]
Jefferson Barracks, Mo	506	369	74	443	875. 49	16. 36	32. 34	2	...	475	55. 0	97	— 2	41.[illegible]
Fort Leavenworth, Kans	716	549	192	741	1, 034. 92	24. 40	34. 07	7	2	844	52. 5	98	—20	40.[illegible]
Leavenworth Prison, Kans	115	91	6	97	843. 47	3. 00	26. 11	2	2	844	52. 5	98	—20	40.[illegible]
Fort Mackinac, Mich	114	71	13	84	736. 84	1. 77	15. 48	....	...	728	40. 6	94	—10	27.[illegible]
Camp Oklahoma, Okla	39	54	10	64	1, 641. 02	1. 69	43. 22	....	...	.....	58. 0	98	—11	42.[illegible]
Fort Reno, Okla	316	505	101	606	1, 917. 72	21. 35	67. 57	9	5	3, 200	.....	.....	.....	.....
Fort Riley, Kans	686	577	218	795	1, 158. 89	19. 17	27. 95	10	2	1, 300	53. 3	104	—25	[illegible]
Rock Island Arsenal, Ill	65	74	10	84	1, 292. 31	1. 40	21. 48	....	...	528	48. 0	94	—12	44.[illegible]
Fort Sheridan, Ill	527	596	147	743	1, 409. 87	18. 09	34. 32	9	5	.....	.....	94	— 8	[illegible]
Fort Sill, Okla	346	482	90	572	1, 653. 18	12. 89	37. 26	10	5	1, 200	59. 2	104	— 6	34.[illegible]
Fort Supply, Ind. T	267	407	74	481	1, 801. 50	12. 55	47. 01	7	...	2, 300	55. 9	104	—13	21.[illegible]
Fort Wayne, Mich	233	271	38	309	1, 326. 18	11. 83	50. 78	6	2	580	47. 6	96	— 3	37.[illegible]
Field	54	30	18	48	888. 89	. 58	10. 73	....	...	.....	.....	.....	.....	.....
Total	4, 178	4, 209	1, 018	5, 227	1, 251. 08	149. 73	35. 84	65	24	....	.....	.....	.....	.....

TABLE III.—*Military posts in each department, alphabetically arranged, with mean strength, admissions for disease and injury, etc.*—Continued.

DEPARTMENT OF DAKOTA.

Names of stations.	Mean strength.	Cases.			Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharges for disability.	Deaths.	Altitude of stations.	Temperature.			Total precipitation.
		Disease.	Injury.	Total.							Mean.	Maximum.	Minimum.	
										Feet.				*In.*
Fort Assinniboine, Mont	459	432	86	518	1,128.54	18.65	40.64	11	2	2,720	41.0	98	—31	12.40
Fort Buford, N. Dak	213	192	68	260	1,220.66	6.08	28.55	3	2	1,930	39.5	100	—40	14.26
Fort Custer, Mont	395	490	116	606	1,534.18	20.20	51.14	6	1	3,040				
Fort Keogh, Mont	386	380	108	488	1,264.25	14.46	37.46	5	5	2,536	43.2	108	—28	12.64
Fort Meade, S. Dak	413	442	201	643	1,556.90	18.55	44.91	17	1	3,624	45.0	102	—29	24.09
Fort Missoula, Mont	189	92	22	114	603.17	3.90	20.64	6		3,375	42.9	100	—15	13.13
Fort Pembina, N. Dak	39	16	1	17	435.90	.51	13.03			900				
Camp Poplar River, Mont	97	90	26	116	1,195.88	2.58	26.62	3		2,030	39.0	104	—42	13.30
Fort Snelling, Minn	412	437	120	557	1,351.94	17.95	43.56	4	4	840	42.8	90	—25	32.55
Fort Sully, S. Dak	176	192	57	249	1,414.77	7.04	39.99	2		1,678	45.1	106	—30	18.81
Fort Yates, N. Dak	259	315	91	406	1,567.57	16.83	64.98	8	3	1,670	42.1	102	—31	21.20
Fort Yellowstone, Wyo	76	57	27	84	1,105.26	1.80	23.62				38.3	91	—22	19.07
Field	119	49	21	70	588.24	1.73	14.51							
Total	3,233	3,184	944	4,128	1,276.83	130.27	40.29	65	18					
DEPARTMENT OF THE PLATTE.														
Fort D. A. Russell, Wyo.	429	242	87	329	766.90	13.55	31.59	6	3	6,021	44.5	93	—29	13.50
Fort Douglas, Utah	485	421	71	492	1,014.43	16.19	33.39	6	1	4,904	51.2	100	— 1	14.08
Fort Du Chesne, Utah	139	105	61	166	1,194.24	4.47	32.14	1				100	—17	5.46
Fort Logan, Colo	332	267	69	336	1,012.05	11.49	34.60	3	2		48.9	98	—17	15.02
Fort McKinney, Wyo	270	272	84	356	1,318.52	12.25	45.36	3	1	5,175	45.3	99	—24	12.35
Fort Niobrara, Nebr	336	293	97	390	1,160.72	13.27	39.50	4	2	2,750	45.9	104	—24	27.92
Fort Omaha, Nebr	483	490	101	591	1,223.60	16.17	33.49	18	3	960	49.2	100	—26	29.44
Camp Pilot Butte, Wyo	48	34	6	40	833.33	1.50	31.25				41.5	95	—27	
Fort Randall, S. Dak	97	76	36	112	1,154.64	2.09	21.57		3	1,245	46.2	102	—22	20.98
Fort Robinson, Nebr	349	318	126	444	1,272.21	9.77	27.99	2	3	3,675		98	—28	32.34
Fort Sidney, Nebr	134	104	32	136	1,014.93	3.62	26.99	1		4,320	46.6	103	—29	19.89
Fort Washakie, Wyo	155	72	33	105	677.42	3.14	20.27		2	5,462	43.0	94	—30	12.23
Field	314	281	76	357	1,136.94	5.80	18.48		2					
Total	3,571	2,975	879	3,854	1,079.25	113.33	31.74	44	22					
DEPARTMENT OF TEXAS.														
Fort Bliss, Tex	107	76	12	88	822.43	2.70	25.25	1	2	3,600	63.2	105	13	5.32
Fort Brown, Tex	59	27	7	34	576.27	2.18	36.91	4	2	50				
Fort Clark, Tex	321	411	83	494	1,538.94	19.51	60.77	8	3	1,000	68.4	103	11	13.99
Camp at Eagle Pass, Tex	53	97	15	112	2,113.21	4.04	76.30	3		800	70.2	107	11	22.97
Fort Hancock, Tex	50	52	41	93	1,860.00	2.23	44.65	1		3,000	59.9	111	— 1	6.96
Fort McIntosh, Tex	149	184	31	215	1,442.95	10.27	68.91	2	2	380	72.0	105	21	21.05
Camp Pena Colorado, Tex	49	41	10	51	1,040.82	2.61	53.19	1	1	3,800	61.1	101	1	12.03
Fort Ringgold, Tex	134	175	55	230	1,716.42	9.40	70.14	5	1	521	73.7	109	16	19.25
Fort Sam Houston, Tex	427	582	137	719	1,683.84	25.16	58.93	16	5	781	69.3	98	19	25.81
San Antonio, Tex	34	10	1	11	323.52	.66	19.44		1	781	69.3	98	19	25.81
Field	98	87	29	116	1,183.67	1.59	16.25							
Total	1,481	1,742	421	2,163	1,460.51	80.35	54.25	41	17					
DEPARTMENT OF ARIZONA.														
Fort Apache, Ariz	197	220	45	265	1,345.18	7.73	39.22	2	2	5,050	53.3	103	5	12.70
Fort Bayard, N. Mex	298	338	64	402	1,348.99	17.65	59.22	6	3	6,040	55.2	102	8	8.80
Fort Bowie, Ariz	136	116	53	169	1,242.65	6.11	44.91		2	4,826	61.5	104	18	13.17
Fort Grant, Ariz	286	302	105	407	1,423.08	13.61	47.61	14	4	4,856	62.2	105	19	7.90
Fort Huachuca, Ariz	318	220	66	286	899.37	7.80	24.54	2	3	5,173	60.2	100	9	11.50
Fort Marcy, N. Mex	123	194	38	232	1,886.18	6.95	56.53	4		6,846	49.1	90	1	11.62
San Carlos, Ariz	167	186	42	228	1,365.27	7.22	43.21	5		2,156	64.3	112	16	12.05
San Diego, Cal	69	55	10	65	942.03	5.44	78.98	7		150	60.2	87	36	9.09
Fort Stanton, N. Mex	112	113	27	140	1,250.00	4.85	43.28	2		7,500	51.4	94	5	11.34
Fort Thomas, Ariz	20	8	4	12	600.00	.88	44.12	1		2,710				
Whipple Barracks, Ariz	192	173	45	218	1,135.42	7.98	41.54	8	2	5,340	59.9	101	0	12.90
Fort Wingate, N. Mex	358	370	130	500	1,396.65	12.93	36.12	2	3	6,649	50.5	99	—2	8.72
Field	154	76	41	117	759.74	1.81	11.74		1					
Total	2,430	2,371	670	3,041	1,251.44	100.95	41.55	53	20					

TABLE III.—*Military posts in each department, alphabetically arranged, with mean strength, admissions for disease and injury, etc.*—Continued.

DEPARTMENT OF CALIFORNIA.

Names of stations.	Mean strength.	Cases. Disease.	Cases. Injury.	Cases. Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharges for disability.	Deaths.	Altitude of stations.	Temperature. Mean.	Temperature. Maximum.	Temperature. Minimum.	Total precipitation.
										Feet.				In.
Alcatraz Island, Cal	117	94	26	120	1,025.64	4.72	40.35	2	....	136	....	....	....	....
Angel Island, Cal	276	219	46	265	960.14	10.11	36.63	13	....	....	....	....	....	....
Benicia Arsenal, Cal	53	23	11	34	641.51	.86	16.13	....	1	64	58.1	94	32	24.4
Benicia Barracks, Cal	132	89	20	109	825.76	2.80	21.24	1	3	64	....	....	....	....
Fort Bidwell, Cal	57	52	28	80	1,403.51	1.90	33.41	2	....	4,680	48.1	95	7	16.
Fort Gaston, Cal	32	24	7	31	968.75	.56	17.50	....	....	397	....	....	....	....
Fort Mason, Cal	58	26	14	40	689.66	1.26	21.72	1	....	113	....	....	....	....
Presidio of San Francisco, Cal	465	345	136	481	1.034.41	16.50	35.48	2	....	60	55.8	92	38	22.
Field	110	47	32	79	718.18	1.52	13.84	....	1	....	....	....	....	....
Total	1,300	919	320	1,239	953.07	40.23	32.16	21	5	....	....	....	....	....

DEPARTMENT OF THE COLUMBIA.

Names of stations.	Mean strength.	Cases. Disease.	Cases. Injury.	Cases. Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharges for disability.	Deaths.	Altitude of stations.	Temperature. Mean.	Temperature. Maximum.	Temperature. Minimum.	Total precipitation.
Boise Barracks, Idaho	98	51	17	68	693.88	2.22	22.64	2	....	2,830	49.3	109	1	11.7
Fort Canby, Wash	106	114	23	137	1,292.45	5.81	54.85	7	....	179	50.6	76	29	62.
Fort Sherman, Idaho	232	103	45	148	637.93	5.97	25.73	2	1	198	....	....	−16	[illegible]
Fort Spokane, Wash	135	46	24	70	518.52	3.41	25.26	2	1	1,600	47.9	104	− 6	17.
Fort Townsend, Wash	64	30	11	41	640.62	.87	13.66	1	....	135	49.0	85	18	[illegible]
Vancouver Barracks, Wash	407	222	74	296	727.27	11.44	28.10	10	1	50	52.9	94	20	[illegible]
Fort Walla Walla, Wash	204	178	58	236	1,156.86	7.66	37.54	1	1	1,018	53.8	105	2	16.9
Field	118	38	20	58	491.53	.64	5.46	....	1	....	....	....	....	....
Total	1,364	782	272	1,054	772.73	38.03	27.88	25	5	....	....	....	....	....

TABLE IV.—*A general view of the results of disease and injury at each of the military stations, arranged in the order of their mean strength.*

GROUP 1.—Fifteen stations, garrisoned by 400 to 700 men each. Average, 504.

Military stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Constantly noneffective. Daily average in hospital.	Constantly noneffective. Ratios per 1,000 of mean strength of— Cases in hospital.	Constantly noneffective. Ratios per 1,000 of mean strength of— All cases.	Deaths. No.	Deaths. Ratio per 1,000 of mean strength	Discharges. No.	Discharges. Ratio per 1,000 of mean strength
Fort Leavenworth, Kans	716	1,034.92	16.72	23.4	34.07	2	2.79	7	9.7
Fort Riley, Kans	686	1,158.89	8.41	12.3	27.95	2	2.92	10	14.5
Columbus Barracks, Ohio	591	2,059.23	37.07	62.6	71.98	7	11.84	8	13.5
Davids Island, N. Y	555	2,115.32	13.83	24.9	46.31	2	3.60	6	10.
Fort Sheridan, Ill	527	1,409.87	13.02	24.7	34.32	5	9.49	9	17.
Jefferson Barracks, Mo	506	875.49	16.16	31.9	32.34	....	....	2	3.9
Fort Douglas, Utah	485	1,014.43	11.42	23.5	33.39	1	2.06	6	12.
Fort Omaha, Nebr	483	1,223.60	11.25	23.3	33.49	3	6.21	18	37.
Presidio of San Francisco, Cal	465	1,034.41	13.19	28.4	35.48	....	....	2	4.
Fort Assinniboine, Mont	459	1,128.54	13.83	30.1	40.64	2	4.36	11	23.
Fort D. A. Russell, Wyo	429	766.90	11.12	25.9	31.59	3	6.99	6	13.
Fort Sam Houston, Tex	427	1,683.84	19.62	45.9	58.93	5	11.71	16	37.4
Fort Meade, S. Dak	413	1,556.90	13.03	31.5	44.91	1	2.42	17	41.1
Fort Snelling, Minn	412	1,351.94	8.99	21.8	43.56	4	9.71	4	9.7
Vancouver Barracks, Wash	407	727.27	7.75	19.0	28.10	1	2.46	10	24.5
Summary	7,561	1,288.06	215.45	28.5	39.73	38	5.03	132	17.4

TABLE IV.—*A general view of the results of disease and injury at each of the military stations, arranged in the order of their mean strength*—Continued.

GROUP 2.—Sixteen stations, garrisoned by 300 to 400 men each. Average, 353.

Military stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Constantly noneffective.			Deaths.		Discharges.	
			Daily average in hospital.	Ratios per 1,000 of mean strength, of— Cases in hospital.	All cases.	No.	Ratios per 1,000 of mean strength	No.	Ratios per 1,000 of mean strength
Fort McPherson, Ga	399	1,634.09	12.10	30.1	58.04	3	7.52	7	17.54
Fort Custer, Mont	395	1,534.18	8.63	21.8	51.14	1	2.53	6	15.19
Fort Keogh, Mont	386	1,264.25	8.08	20.9	37.46	5	12.95	5	12.95
Willets Point, N. Y	376	1,162.23	7.91	21.0	31.33	2	5.32	3	7.98
Fort Monroe, Va	375	1,797.33	11.11	29.6	45.38	1	2.67	7	18.67
West Point (soldiers), N. Y	375	1,424.00	3.90	10.4	25.59	2	5.33	4	10.67
Fort Wingate, N. Mex	358	1,396.65	6.22	17.4	36.12	3	8.38	2	5.59
Fort Robinson, Nebr	349	1,272.21	6.77	19.4	27.99	3	8.60	2	5.73
Fort Sill, Okla	346	1,653.18	6.04	17.5	37.26	5	14.45	10	28.90
Fort Niobrara, Nebr	336	1,160.72	10.15	30.2	39.50	2	5.95	4	11.90
Madison Barracks, N. Y	333	1,108.10	6.46	19.4	34.40	4	12.01	9	27.03
Fort Logan, Colo	332	1,012.05	8.83	26.6	34.60	2	6.02	3	9.04
Washington Barracks, D. C	332	1,981.93	11.58	34.9	43.22	1	3.01	4	12.05
Fort Clark, Tex	321	1,538.94	14.61	45.5	60.77	3	9.35	8	24.92
Fort Huachuca, Ariz	318	899.37	5.10	16.0	24.54	3	9.43	2	6.29
Fort Reno, Okla	316	1,917.72	16.58	52.5	67.57	5	15.82	9	28.48
Summary	5,647	1,424.83	144.08	25.5	40.91	45	7.97	85	15.05

GROUP 3.—Fifteen stations, garrisoned by 200 to 300 men each. Average, 253.

Military stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Daily average in hospital.	Cases in hospital.	All cases.	Deaths: No.	Ratios per 1,000 of mean strength	Discharges: No.	Ratios per 1,000 of mean strength
Fort Bayard, N. Mex	298	1,348.90	11.52	38.7	50.22	3	10.07	6	20.13
Fort Grant, Ariz	286	1,423.08	7.47	26.1	47.61	4	13.99	14	48.95
Angel Island, Cal	276	960.14	8.62	31.2	36.63			13	47.10
Fort McKinney, Wyo	270	1,318.52	9.13	33.7	45.36	1	3.70	3	11.11
Fort Thomas, Ky	268	1,123.13	9.46	35.3	42.19			9	33.58
Fort Supply, Ind. T	267	1,801.50	8.18	30.6	47.01			7	26.22
Fort Hamilton, N. Y	262	2,354.96	3.15	12.0	48.04	1	3.82	5	19.08
Fort Yates, N. Dak	259	1,567.57	10.74	41.5	64.98	3	11.58	8	30.89
Fort Adams, R. I	248	1,129.03	5.13	20.7	32.62	3	12.10	2	8.06
Fort Columbus, N. Y	244	815.57	8.29	34.0	38.31	1	4.10	3	12.29
Fort Myer, Va	236	1,618.64	8.17	34.6	40.55	3	12.71	6	25.42
Fort Wayne, Mich	233	1,326.18	5.80	24.9	50.78	2	8.58	6	25.75
Fort Sherman, Idaho	232	637.93	4.12	17.8	25.73	1	4.31	2	8.62
Fort Buford, N. Dak	213	1,220.66	5.05	23.7	28.55	2	9.39	3	14.08
Fort Walla Walla, Wash	204	1,156.86	5.73	28.1	37.54	1	4.90	1	4.90
Summary	3,796	1,330.08	110.55	29.1	43.58	25	6.59	88	23.18

GROUP 4.—Twenty-nine stations, garrisoned by 100 to 200 men each. Average, 141.

Military stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Daily average in hospital.	Cases in hospital.	All cases.	Deaths: No.	Ratios per 1,000 of mean strength	Discharges: No.	Ratios per 1,000 of mean strength
Fort Apache, Ariz	197	1,345.18	6.19	31.4	39.22	2	10.15	2	10.15
Whipple Barracks, Ariz	192	1,135.42	6.25	32.6	41.54	2	10.42	8	41.67
Fort Missoula, Mont	189	603.17	3.48	18.4	20.04			6	31.75
Fort Niagara, N. Y	188	670.21	4.11	21.9	29.37	1	5.32	3	15.96
Mount Vernon Barracks, Ala	181	1,817.68	4.83	26.7	49.81	8	44.19	6	33.15
Fort Sully, S. Dak	176	1,414.77	2.96	16.8	39.99			2	11.36
Fort Wadsworth, N. Y	175	1,108.57	2.48	14.2	20.50	1	5.71		
an Carlos, Ariz	167	1,365.27	5.12	30.7	43.21			5	29.94
Fort McHenry, Md	160	1,306.25	7.04	44.0	50.33	1	6.25	8	50.00
Fort Washakie, Wyo	155	677.42	2.58	16.7	20.27	2	12.90		
Fort McIntosh, Tex	149	1,442.95	7.49	50.3	68.91	2	13.42	2	13.42
Fort Du Chesne, Utah	139	1,194.24	2.46	17.7	32.14			1	7.19
Fort Bowie, Ariz	136	1,242.65	4.44	32.6	44.91	2	14.70		
Fort Spokane, Wash	135	518.52	2.83	21.0	25.26	1	7.41	2	14.81
Fort Ringgold, Tex	134	1,716.42	8.43	62.9	70.14	1	7.46	5	37.31
Fort Sidney, Nebr	134	1,014.93	2.26	16.9	26.99			1	7.46
Benicia Barracks, Cal	132	825.76	2.32	17.6	21.24	3	22.73	1	7.58
Fort Marcy, N. Mex	123	1,886.18	4.43	36.0	56.53			4	32.52
t. Francis Barracks, Fla	123	1,967.48	3.91	31.8	45.60	1	8.13	8	65.04
Alcatraz Island, Cal	117	1,025.64	3.75	32.1	40.35			2	17.09
Fort Brady, Mich	117	923.08	2.91	24.9	28.60	1	8.55	3	25.64
Fort Leavenworth Prison, Kans	115	843.47	2.21	19.2	26.11	2	17.39	2	17.39
Fort Warren, Mass	115	608.70	2.32	20.2	22.14			2	17.39
Fort Mackinac, Mich	114	736.84	1.22	10.7	15.48				
Fort Stanton, N. Mex	112	1,250.00	2.12	18.9	43.28			2	17.86
Fort Bliss, Tex	107	822.43	2.56	23.9	25.25	2	18.69	1	9.34
Fort Canby, Wash	106	1,292.45	4.36	41.1	54.85			7	66.04
ackson Barracks, La	106	1,650.94	5.07	47.8	57.51	1	9.43	8	75.47
Fort Porter, N. Y	105	1,133.33	3.24	30.9	35.91			1	9.52
Summary	4,099	1,157.36	113.36	27.7	37.68	33	8.05	92	22.45

TABLE IV.—*A general view of the results of disease and injury at each of the* mili*stations, arranged in the order of their mean strength*—Continued.

GROUP 5.—Thirty-nine stations, garrisoned by 1 to 100 men each. Average, 53.

Military stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Constantly noneffective. Daily average in hospital.	Constantly noneffective. Ratios per 1,000 of mean strength, of— Cases in hospital.	Constantly noneffective. Ratios per 1,000 of mean strength, of— All cases.	Deaths. No.	Deaths. Ratios per 1,000 of mean strength	Di No.
Boisé Barracks, Idaho	98	693.88	1.38	14.1	22.64			2
Fort Schuyler, N. Y	98	1,255.10	2.03	20.7	33.68	3	30.61	1
Camp Poplar River, Mont	97	1,195.88	1.61	16.6	26.62			3
Fort Randall, S. Dak	97	1,154.64	.92	9.5	21.57	3	30.93	
Fort Yellowstone, Wyo	76	1,105.26	.93	12.2	23.62			
Fort Barrancas, Fla	75	1,986.67	5.03	67.1	70.64			2
San Diego Barracks, Cal	69	942.03	4.66	67.5	78.88			7
Rock Island Arsenal, Ill	65	1,292.31	.52	8.0	21.48			
Fort Townsend, Wash	64	640.62	.50	7.8	13.66			1
Fort Trumbull, Conn	62	1,048.39	2.15	34.7	36.93			1
Fort Ontario, N. Y	61	967.21	1.46	23.9	33.33	1	16.39	2
Plattsburg Barracks, N. Y	61	1,196.72	1.07	17.5	25.62			
Newport Barracks, Ky	60	1,200.00	1.28	21.3	33.70	1	16.67	
Fort Brown, Tex	59	576.27	1.97	33.4	36.91	2	33.90	4
Fort Mason, Cal	58	689.66	1.05	18.1	21.72			1
Fort Bidwell, Cal	57	1,403.51	.98	17.2	33.41			2
Fort Preble, Me	57	1,228.07	1.85	31.9	49.94			3
Watervliet Arsenal, N. Y	55	1,472.73	1.03	18.7	60.96			1
Fort Wood, N. J	54	685.19	.03	.6	4.55	1	18.52	
Benicia Arsenal, Cal	53	641.51	.18	3.4	16.13	1	18.87	
Camp at Eagle Pass, Tex	53	2,113.21	1.84	34.7	76.30			3
Chicago, headquarters department of the Missouri, Ill	52	192.31			8.72			
Sandy Hook, proving ground, N. J	52	1,884.62	.01	.2	19.13			1
Fort Hancock, Tex	50	1,860.00	1.61	32.2	44.65			1
Camp Pena Colorado, Tex	49	1,040.82	1.41	28.8	53.19	1	20.41	1
Camp Pilot Butte, Wyo	48	833.33	1.13	23.5	31.25			
Frankford Arsenal, Pa	40	700.00	.10	2.5	32.51	2	50.00	
Camp Oklahoma, Okla	39	1,641.02	.91	23.3	43.22			
Fort Pembina, N. Dak	39	435.90	.05	1.3	13.03			
San Antonio, headquarters department of Texas, Tex	34	323.52	.02	.6	19.44	1	29.41	
Allegheny Arsenal, Pa	32	1,343.75	.39	12.2	56.01	1	31.25	1
Fort Gaston, Cal	32	968.75	.99	30.9	17.50			
Watertown Arsenal, Mass	31	903.23	.16	5.2	16.75			
Augusta Arsenal, Ga	27	370.37	.09	3.3	17.20	1	37.04	
Indianapolis Arsenal, Ind	25	1,680.00	.36	14.4	34.97			
Springfield Armory, Mass	24	500.00			16.05			
Fort Thomas, Ariz	20	600.00	1.26	63.0	44.12			1
Columbia Arsenal, Tenn	19	2,631.58			85.42	1	52.63	
Kennebec Arsenal, Me	15	1,533.33			21.13			
Summary	2,057	1,099.66	30.43	19.2	33.52	19	9.24	38

GROUP 6.—Field.

Military stations.	Mean strength.	Admission rate per 1,000 of mean strength.	Constantly noneffective. Daily average in hospital.	Constantly noneffective. Ratios per 1,000 of mean strength, of— Cases in hospital.	Constantly noneffective. Ratios per 1,000 of mean strength, of— All cases.	Deaths. No.	Deaths. Ratios per 1,000 of mean strength	Di No.
Department of the Platte	314	1,136.94			18.48	2	6.37	
Department of Arizona	154	759.74			11.74	1	6.49	
Department of Dakota	119	588.24			14.51			
Department of the Columbia	118	491.53			5.46	1	8.47	
Department of California	110	718.18			13.84	1	9.09	
Department of Texas	98	1,183.67			16.25			
Department of the Missouri	54	888.89			10.73			
Department of the East	43	1,100.00			9.15			
Summary	1,010	879.21			13.93	5	4.91	
Hot Springs (Army and Navy General Hospital), Ark	33	606.06	24.17			1		23
At large						7		35
Total for the Army	24,203	1,270.42	647.06	26.73	39.60	173	6.44	493

TABLE V.—*Twenty posts having the highest admission rates for the year 1892, also their admission rates for the years 1887 to 1891, inclusive.*

Names of stations.	Mean strength.	Ratios per 1,000 of mean strength.				Admission rates per 1,000 of mean strength.				
		Admissions.	Deaths.	Discharges.	Constantly noneffective.	1891.	1890.	1889.	1888.	1887.
ort Hamilton, N. Y	262	2,354.96	3.82	19.08	48.04	2,329.32	1,626.26	1,552.63	1,107.14	1,102.86
avids Island, N. Y	555	2,115.32	3.60	10.81	46.31	1,884.82	1,642.86	1,259.07	1,533.12	1,437.28
olumbus Barracks, Ohio	591	2,059.23	11.84	13.54	71.98	2,209.89	1,876.49	2,318.86	2,075.66	1,942.36
ort Barrancas, Fla	75	1,986.67	.....	26.67	70.64	2,629.63	1,674.42	1,360.66	1,109.09	1,037.04
ashington Barracks, D. C	332	1,981.93	3.01	12.05	43.22	1,774.19	1,329.41	1,139.44	1,723.48	1,767.79
t. Francis Barracks, Fla	123	1,967.48	8.13	65.04	45.60	3,121.50	2,015.38	1,568.97	1,378.79	1,718.75
ort Reno, Okla	316	1,917.72	15.82	28.48	67.57	2,111.92	1,922.30	1,474.51	1,378.55	1,607.97
ort Marcy, N. Mex	123	1,896.18	.....	32.52	56.53	1,500.00	1,209.09	1,606.67	1,494.12	1,287.50
ount Vernon Barracks, Ala	181	1,817.68	44.19	33.15	49.81	1,291.93	1,522.52	1,344.83	1,368.42	1,071.43
ort Supply, Ind. T	267	1,801.50	.....	26.22	47.01	1,192.66	1,334.93	1,112.68	1,604.56	1,049.06
ort Monroe, Va	375	1,797.33	2.67	18.67	45.38	1,379.86	1,395.16	1,667.57	1,516.01	1,400.87
ort Ringgold, Tex	134	1,716.42	7.46	37.31	70.14	1,266.07	865.55	562.50	818.84	1,037.59
ort Sam Houston, Tex	427	1,683.84	11.71	37.47	58.93	1,985.97	2,430.69	1,262.61	943.60	1,570.67
ort Sill, Okla	346	1,653.18	14.45	28.90	37.26	1,947.37	2,551.52	1,797.10	1,592.06	1,744.68
ackson Barracks, La	106	1,650.94	9.43	75.47	57.51	1,771.43	2,163.04	1,875.00	910.45	884.61
ort McPherson, Ga	399	1,634.09	7.52	17.54	58.04	2,394.98	2,489.36	3,416.67	....	....
ort Myer, Va	236	1,618.64	12.71	25.42	40.55	1,063.58	1,350.36	1,186.05	1,391.30	2,093.75
ort Yates, N. Dak	259	1,567.57	11.58	30.89	64.98	1,213.04	1,557.49	840.91	1,161.65	1,133.83
ort Meade, S. Dak	413	1,556.90	2.42	41.16	44.91	1,861.11	853.90	1,312.14	1,121.72	1,935.06
ort Clark, Tex	321	1,538.94	9.35	24.92	60.77	1,256.72	1,669.44	1,355.30	1,433.87	1,400.00
The Army	24,203	1,270.42	6.44	18.35	39.60	1,364.78	1,384.25	1,315.02	1,270.73	1,246.88

ABLE VI.—*Twenty posts having the highest noneffective rates for the year 1892; also, their noneffective rates for the years 1887 to 1891, inclusive.*

Names of stations.	Mean strength.	Constantly noneffective per 1,000 of mean strength.	Average sick daily.	Average of days each case was treated.	Constantly noneffective per 1,000 of mean strength.				
					1891.	1890.	1889.	1888.	1887.
olumbus Barracks, Ohio	591	71.98	42.54	12.79	77.13	77.55	92.74	81.87	74.51
ort Barrancas, Fla	75	70.64	5.30	13.01	103.33	58.49	48.42	33.98	34.06
ort Ringgold Tex	134	70.14	9.40	14.96	52.05	26.61	23.34	35.44	50.38
ort McIntosh, Tex	149	68.91	10.27	17.48	54.97	25.31	53.75	62.23	58.38
ort Reno, Okla	316	67.57	21.35	12.90	59.47	56.53	61.55	46.85	46.81
ort Yates, N. Dak	259	64.98	16.83	15.17	53.03	51.14	42.43	41.05	37.81
ort Clark, Tex	321	60.77	19.51	14.45	39.61	65.25	60.05	51.71	36.45
ort Bayard, N. Mex	298	59.22	17.65	16.07	50.56	51.89	47.82	39.60	27.32
ort Sam Houston, Tex	427	58.93	25.16	12.81	56.59	63.25	50.64	38.41	51.59
ort McPherson, Ga	399	58.04	23.16	12.99	61.12	61.16	72.80	....	......
ackson Barracks, La	106	57.51	6.10	12.75	68.70	70.64	35.75	17.78	19.07
ort Marcy, N. Mex	123	56.53	6.95	10.97	38.87	24.96	44.47	47.32	28.12
ort Canby, Wash	106	54.85	5.81	15.53	47.15	25.22	34.05	....	20.46
ort Custer, Mont	395	51.14	20.20	12.20	59.43	57.91	49.72	49.58	47.81
ort Wayne, Mich	233	50.78	11.83	14.01	44.52	37.84	42.02	39.35	36.13
ort McHenry, Md	160	50.33	8.05	14.10	60.34	63.73	53.71	62.99	59.67
ount Vernon Barracks, Ala	181	49.81	9.02	10.03	56.59	68.57	54.86	37.82	36.71
ort Hamilton, N. Y	262	48.04	12.57	7.46	52.50	41.91	41.40	29.11	32.31
ort Grant, Ariz	286	47.61	13.61	12.24	34.91	32.09	47.45	50.76	80.15
ort Supply, Ind. T	267	47.01	12.55	9.57	31.39	36.32	30.10	42.71	36.46
The Army	24,203	39.60	958.51	11.41	42.01	42.71	44.12	41.91	42.38

TABLE VII.—*Twenty posts having the highest admission rates for disease, excluding* *diseases, vaccina and alcoholism, together with their ratios for deaths, discharges,* *constant noneffectiveness; also, the corresponding average rates for the Army, year*

Names of stations.	Mean strength.	Ratios per 1,000 of mean strength		
		Admissions.	Deaths.	Discharges.
Fort Hamilton, N. Y	262	1,862.60	3.82	15.26
Washington Barracks, D. C	332	1,563.27	....	3.01
St. Francis Barracks, Fla	123	1,512.19	8.13	56.91
Fort Reno, Okla	316	1,481.02	12.66	22.15
Fort Supply, Ind. T	267	1,411.99	....	7.49
Fort Barrancas, Fla	75	1,400.00	....	13.33
Fort Monroe, Va	375	1,381.33	2.67	8.00
Columbus Barracks, Ohio	591	1,333.34	10.15	8.47
Fort Sill, Okla	346	1,312.14	11.56	28.90
Fort Marcy, N. Mex	123	1,300.82	....	24.39
Mount Vernon Barracks, Ala	181	1,281.78	33.15	27.63
Fort Sam Houston, Tex	427	1,210.78	7.03	30.44
Fort Clark, Tex	321	1,149.52	9.35	12.45
Fort Custer, Mont	395	1,129.12	2.53	12.66
Davids Island, N. Y	555	1,115.32	1.80	5.41
Fort Yates, N. Dak	259	1,111.98	3.86	27.03
Fort Myer, Va	236	1,067.79	4.24	20.18
Fort McIntosh, Tex	149	1,067.12	6.71	6.71
Fort Bayard, N. Mex	298	1,053.68	6.71	3.36
West Point, N. Y	375	1,053.32	....	5.33
The Army	24,203	857.74	4.25	14.18

TABLE VIII.—*Twenty posts having the highest noneffective rates for disease,* *venereal diseases, vaccina and alcoholism, together with the average number sick* *and average duration of each case; also, the corresponding average rates of the* *year 1892.*

Names of stations.	Mean strength.	Ratio per 1,000 of mean strength constantly noneffective.	Average number of sick daily.
Fort Barrancas, Fla	75	51.01	3.8
Fort Reno, Okla	316	49.89	15.8
Fort Ringgold, Tex	134	46.46	6.2
Fort Yates, N. Dak	259	46.05	11.9
Fort Clark, Tex	321	43.45	13.9
Fort Bayard, N. Mex	298	41.34	12.3
Columbus Barracks, Ohio	591	39.66	23.4
Fort Canby, Wash	106	39.14	4.1
Fort Sam Houston, Tex	427	38.99	16.6
Fort McIntosh, Tex	149	38.26	5.7
Fort Stanton, N. Mex	112	36.79	4.1
Mount Vernon Barracks, Ala	181	36.33	6.6
Fort Marcy, N. Mex	123	35.67	4.4
St. Francis Barracks, Fla	123	34.50	4.2
Jackson Barracks, La	106	33.10	3.5
Fort Hamilton, N. Y	262	31.08	8.1
Fort Wayne, Mich	233	31.07	7.2
Fort Supply, Ind. T	267	31.00	8.3
Fort McPherson, Ga	399	30.63	12.2
Fort Bowie, Ariz	136	29.76	4.0
The Army	24.203	24.42	590.8

ABLE IX.—*The military posts in each department, showing the rates of admission, death, discharge, and constant noneffectiveness for disease, not including venereal diseases, vaccina nor alcoholism, year 1892.*

DEPARTMENT OF THE EAST.

[Excluding venereal diseases, vaccina. alcoholism and injuries.]

Names of stations.	Mean strength.	Ratio per 1,000 of mean strength.			
		Admissions.	Deaths.	Discharges.	Constantly noneffective.
olumbia Arsenal, Tenn	19	2,210.53	....	....	62.69
ort Hamilton, N. Y	262	1,862.60	3.82	15.26	31.08
andy Hook, N. J	52	1,653.85	....	19.23	15.71
ashington Barracks, D. C	332	1,563.27	....	3.01	27.64
t. Francis Barracks, Fla	123	1,512.19	8.13	56.91	34.50
ort Barrancas, Fla	75	1,400.00	....	13.33	51.01
ort Monroe, Va	375	1,381.33	2.67	8.00	29.60
olumbus Barracks, Ohio	591	1,333.34	10.15	8.47	39.66
ount Vernon Barracks, Ala	181	1,281.78	38.67	27.63	36.33
atervliet Arsenal, N. Y	55	1,272.73	....	18.18	55.79
ennebec Arsenal, Me	15	1,200.00	....	....	15.12
llegheny Arsenal, Pa	32	1,125.00	31.25	31.25	46.36
avids Island, N. Y	555	1,115.32	1.80	5.41	20.06
ort Myer, Va	236	1,067.79	4.24	20.18	23.83
est Point, N. Y	375	1,053.32	....	5.33	17.72
ort McPherson, Ga	399	1,030.09	7.52	15.04	30.63
ckson Barracks, La	106	990.59	9.43	37.74	33.10
ewport Barracks, Ky	60	916.66	16.67	....	24.46
ort Preble, Me	57	912.29	....	17.55	32.98
lattsburg Barracks, N. Y	61	868.76	....	....	17.65
atertown Arsenal, Mass	31	838.71	....	....	16.43
ort McHenry, Md	160	818.75	6.25	37.50	25.41
ort Trumbull, Conn	62	806.45	....	....	30.72
ort Schuyler, N. Y	98	775.51	....	10.20	18.92
ort Thomas, Ky	268	764.92	....	29.85	24.90
adison Barracks, N. Y	333	759.76	6.01	21.02	24.57
ort Wadsworth, N. Y	175	720.00	5.71	....	13.14
illets Point, N. Y	376	715.42	5.32	5.32	23.69
rankford Arsenal, Pa	40	675.00	50.00	....	24.38
ort Adams, R. I	248	661.30	8.07	8.06	12.97
ort Columbus, N. Y	244	586.06	4.10	8.19	26.04
ort Porter, N. Y	105	580.97	....	9.52	17.81
ort Ontario, N. Y	61	563.77	....	16.39	20.61
ort Niagara, N. Y	188	452.12	....	15.96	19.79
ort Wood, N. Y	54	444.44	....	....	1.72
ringfield Armory, Mass	24	375.00	....	....	9.34
ugusta Arsenal, Ga	27	370.37	37.04	....	17.20
ort Warren, Mass	115	347.83	....	17.39	13.10
ield	43	697.67	....	....	5.66
Total	6,613	1,027.39	5.45	12.86	25.51

DEPARTMENT OF THE MISSOURI.

[Excluding venereal diseases, vaccinå, alcoholism and injuries.]

ort Reno, Okla	316	1,481.02	12.66	22.15	49.89
rt Supply, Ind. T	267	1,411.99	....	7.49	31.00
dianapolis Arsenal, Ind	25	1,400.00	....	....	26.23
rt Sill, Okla	346	1,312.14	11.56	28.90	29.51
ort Wayne, Mich	233	974.25	4.29	25.75	31.07
ort Sheridan, Ill	527	969.56	5.69	15.18	20.54
amp Oklahoma, Okla	39	948.73	....	....	18.92
ock Island Arsenal, Ill	65	907.69	....	....	11.68
ort Riley, Kans	686	702.62	....	11.66	16.92
eavenworth Prison, Kans	115	678.26	8.70	17.39	14.09
rt Leavenworth, Kans	716	663.41	1.40	4.19	17.12
fferson Barracks, Mo	506	503.95	....	1.98	15.23
rt Mackinac, Mich	114	473.70	....	....	9.74
rt Brady, Mich	117	418.80	....	8.55	9.78
icago, Ill	52	173.08	....	....	7.99
ield	54	462.96	....	....	5.46
Total	4,178	860.71	3.35	11.49	21.70

TABLE IX.—*The military posts in each department, showing the rates of admission,* [illegible] *discharge, and constant noneffectiveness for disease, etc*—Continued.

DEPARTMENT OF DAKOTA.

[Excluding venereal diseases, vaccina, alcoholism and injuries.]

Names of stations.	Mean strength.	Ratios per 1,000 of mean strength.			
		Admissions.	Deaths.	Discharges.	[illegible]
Fort Custer, Mont	395	1,129.12	2.53	12.06	[illegible]
Fort Yates, N. Dak	259	1,111.98	3.86	27.03	[illegible]
Fort Meade, S. Dak	413	987.89	2.42	31.48	[illegible]
Fort Sully, S. Dak	176	965.92	....	....	[illegible]
Fort Keogh, Mont	386	875.65	5.18	12.95	[illegible]
Fort Snelling, Minn	412	844.67	9.71	9.71	[illegible]
Fort Buford, N. Dak	213	826.30	4.69	14.08	[illegible]
Fort Assinniboine, Mont	459	825.72	4.36	21.79	[illegible]
Camp Poplar River, Mont	97	814.43	....	30.93	[illegible]
Fort Yellowstone, Wyo	76	710.53	....	....	[illegible]
Fort Missoula, Mont	189	444.45	....	21.17	[illegible]
Fort Pembina, N. Dak	39	410.26	....	....	[illegible]
Field	119	386.55	....	....	[illegible]
Total	3,233	875.98	3.71	16.71	[illegible]

DEPARTMENT OF THE PLATTE.

[Excluding venereal diseases, vaccina, alcoholism and injuries.]

Fort McKinney, Wyo	270	851.86	....	7.41	[illegible]
Fort Robinson, Nebr	349	828.07	8.60	2.87	[illegible]
Fort Omaha, Nebr	483	770.17	6.21	18.99	[illegible]
Fort Sidney, Nebr	134	738.81	....	....	[illegible]
Fort Niobrara, Nebr	336	732.15	2.98	8.92	[illegible]
Fort Douglas, Utah	485	731.96	2.06	8.25	[illegible]
Fort Du Chesne, Utah	139	726.61	....	7.19	[illegible]
Fort Logan, Colo	332	674.71	6.02	9.04	[illegible]
Camp Pilot Butte, Wyo	48	645.84	....	....	[illegible]
Fort Randall, S. Dak	97	639.18	....	....	[illegible]
Fort D. A. Russell, Wyo	429	489.50	4.66	9.32	[illegible]
Fort Washakie, Wyo	155	406.46	....	....	[illegible]
Field	314	850.32	....	....	[illegible]
Total	3,571	713.82	3.64	8.96	[illegible]

DEPARTMENT OF TEXAS.

[Excluding venereal diseases, vaccina, alcoholism and injuries.]

Camp at Eagle Pass, Tex	53	1,622.64	....	56.60	[illegible]
Fort Sam Houston, Tex	427	1,210.78	7.03	30.44	[illegible]
Fort Clark, Tex	321	1,149.52	9.35	12.45	[illegible]
Fort McIntosh, Tex	149	1,067.12	6.71	6.71	[illegible]
Fort Ringgold, Tex	134	1,029.83	....	37.31	[illegible]
Fort Hancock, Tex	50	1,000.00	....	20.00	[illegible]
Camp Pena Colorado, Tex	49	693.86	20.41	....	[illegible]
Fort Bliss, Tex	107	514.02	18.69	9.34	[illegible]
Fort Brown, Tex	59	389.83	....	50.85	[illegible]
San Antonio, Tex	34	294.11	29.41	....	[illegible]
Field	98	765.30	....	....	[illegible]
Total	1,481	1,023.64	7.43	20.92	[illegible]

TABLE IX.—*The military posts in each department, showing the rates of admission, death, discharge, and constant noneffectiveness for disease, etc.*—Continued.

DEPARTMENT OF ARIZONA.

[Excluding venereal diseases, vaccina, alcoholism and injuries.]

Names of stations.	Mean strength.	Ratios per 1,000 of mean strength.			
		Admissions.	Deaths.	Discharges.	Constantly non-effective.
ort Marcy, N. Mex	123	1,300.82	....	24.39	35.67
ort Bayard, N. Mex	298	1,053.68	6.71	3.36	41.34
an Carlos, Ariz	167	964.07	....	17.96	29.61
ort Grant, Ariz	286	954.54	13.99	38.46	27.42
ort Stanton, N. Mex	112	946.42	....	17.86	36.79
ort Wingate, N. Mex	358	918.99	2.79	2.79	18.19
ort Apache, Ariz	197	898.48	5.08	10.15	27.60
ort Bowie, Ariz	136	742.65	14.70	....	29.76
hipple Barracks, Ariz	192	729.16	10.42	41.67	25.91
an Diego Barracks, Cal	69	681.16	....	71.47	60.31
ort Huachuca, Ariz	318	547.17	6.29	3.14	14.97
ort Thomas, Ariz	20	400.00	....	50.00	35.52
ield	154	467.54	....	....	6.05
Total	2,430	848.57	5.76	15.64	26.80

DEPARTMENT OF CALIFORNIA.

[Excluding venereal diseases, vaccina, alcoholism and injuries.]

rt Bidwell, Cal	57	877.19	....	35.09	21.42
lcatraz Island, Cal	117	641.02	....	8.54	18.93
ngel Island, Cal	276	608.68	....	39.86	22.27
esidio of San Francisco, Cal	465	591.40	....	2.15	18.27
rt Gaston, Cal	32	562.50	....	....	7.43
nicia Barracks, Cal	132	507.57	15.15	7.58	10.21
nicia Arsenal, Cal	53	377.36	....	....	11.23
rt Mason, Cal	58	310.35	....	....	12.01
eld	110	372.73	....	....	5.45
Total	1,300	563.08	1.54	13.07	17.23

DEPARTMENT OF THE COLUMBIA.

[Excluding venereal diseases, vaccina, alcoholism and injuries.]

rt Canby, Wash	106	943.40	....	47.17	39.14
rt Walla Walla, Wash	204	735.30	4.90	4.90	25.34
ise Barracks, Idaho	98	500.01	....	20.41	19.15
ncouver Barracks, Wash	407	452.07	2.46	24.57	19.92
rt Sherman, Idaho	232	400.86	....	4.31	14.82
rt Townsend, Wash	64	296.89	....	15.62	6.18
rt Spokane, Wash	135	259.25	7.41	7.41	10.07
eld	118	279.68	8.47	....	2.49
Total	1,361	486.08	2.94	15.40	18.19

TABLE X.—*The monthly prevalence of disease among the white, colored and In*
troops of the Army during the year 1892.

Months.		Mean strength.	Admitted to sick report.						Constantly noneffective.					
			Number.			Ratios per 1,000 of mean strength.			Days.			Ratios per [illegible] mean [illegible]		
			Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.	Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.	Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.	Venereal, alcoholism, and injuries.	Other diseases.	[illegible]
Jan...	W.	21,438	639	2,523	3,162	29.81	117.69	147.50	9,706	22,838	32,544	14.60	[illegible]	[illegible]
	C..	2,022	69	248	317	34.12	122.65	156.77	1,265	2,254	3,519	20.18	[illegible]	[illegible]
	I..	610	20	79	99	32.79	129.51	162.30	282	622	904	14.91	[illegible]	[illegible]
	T.	24,070	728	2,850	3,578	30.25	118.41	148.65	11,253	25,714	36,967	15.08	34.46	[illegible]
Feb...	W.	21,858	564	1,717	2,281	25.80	78.55	104.35	7,754	18,033	25,787	12.23	[illegible]	[illegible]
	C..	2,011	71	203	274	35.30	100.94	136.24	1,037	2,070	3,107	17.78	[illegible]	[illegible]
	I..	698	27	68	95	38.68	97.42	136.10	318	498	816	15.71	[illegible]	[illegible]
	T.	24,567	662	1,988	2,650	26.95	80.93	107.87	9,109	20,601	29,710	12.78	[illegible]	[illegible]
Mar..	W.	21,878	646	1,711	2,357	29.53	78.21	107.73	8,409	17,937	26,346	12.40	26.44	[illegible]
	C..	2,032	62	160	222	30.51	78.74	109.25	845	1,949	2,794	13.41	30.94	[illegible]
	I..	723	24	58	82	33.19	80.22	113.41	258	582	840	11.51	[illegible]	[illegible]
	T.	24,633	732	1,929	2,661	29.72	78.30	108.03	9,512	20,468	29,980	12.46	[illegible]	[illegible]
Apr..	W.	21,625	599	1,413	2,012	27.70	65.34	93.04	8,303	16,081	24,384	12.80	[illegible]	[illegible]
	C..	2,027	66	121	187	32.56	59.69	92.25	760	1,524	2,284	12.50	[illegible]	[illegible]
	I..	751	16	43	59	21.30	57.25	78.56	222	446	668	9.85	[illegible]	[illegible]
	T.	24,403	681	1,577	2,258	27.90	64.63	92.53	9,285	18,051	27,336	12.68	24.66	[illegible]
May..	W.	21,598	665	1,451	2,116	30.79	67.19	97.98	8,950	16,237	25,187	13.37	[illegible]	[illegible]
	C..	1,978	74	140	214	37.41	70.78	108.18	935	1,559	2,494	15.25	[illegible]	[illegible]
	I..	761	26	45	71	34.17	59.13	93.30	339	401	740	14.37	[illegible]	[illegible]
	T.	24,337	765	1,636	2,401	31.44	67.23	98.66	10,224	18,197	28,421	13.56	[illegible]	[illegible]
June..	W.	21,258	732	1,439	2,171	34.44	67.69	102.13	9,560	15,084	24,644	14.99	[illegible]	[illegible]
	C..	2,007	69	145	214	34.38	72.25	106.63	830	1,320	2,150	13.79	[illegible]	[illegible]
	I..	771	19	46	65	24.64	59.66	84.30	354	498	852	15.31	[illegible]	[illegible]
	T..	24,036	820	1,630	2,450	34.12	67.82	101.94	10,744	16,902	27,646	14.90	23.44	[illegible]
July..	W.	21,568	747	1,567	2,314	34.64	72.66	107.29	9,570	15,312	24,882	14.31	[illegible]	[illegible]
	C..	2,041	69	159	228	33.81	77.90	111.71	947	1,308	2,255	14.97	[illegible]	[illegible]
	I..	748	38	57	95	50.80	76.20	127.00	565	585	1,150	24.37	[illegible]	[illegible]
	T.	24,357	854	1,783	2,637	35.06	73.20	108.26	11,082	17,205	28,287	14.68	[illegible]	[illegible]
Aug..	W.	21,210	682	1,642	2,324	32.15	77.42	109.57	9,129	15,375	24,504	13.88	[illegible]	[illegible]
	C..	1,978	65	138	203	32.86	69.77	102.63	726	1,216	1,942	11.84	[illegible]	[illegible]
	I..	794	30	42	72	37.78	52.90	90.68	475	488	963	19.30	[illegible]	[illegible]
	T.	23,982	777	1,822	2,599	32.40	75.97	108.37	10,330	17,079	27,409	13.69	[illegible]	[illegible]
Sept..	W.	21,055	657	1,645	2,302	31.20	78.13	109.33	8,401	15,956	24,357	13.30	[illegible]	[illegible]
	C..	1,976	63	141	204	31.88	71.36	103.24	884	1,045	1,929	14.91	[illegible]	[illegible]
	I..	714	24	48	72	33.61	67.23	100.84	522	560	1,082	24.37	26.14	[illegible]
	T.	23,745	744	1,834	2,578	31.33	77.24	108.57	9,807	17,561	27,368	13.77	[illegible]	[illegible]
Oct...	W.	20,868	655	1,440	2,095	31.39	69.01	100.40	9,271	16,113	25,384	14.33	[illegible]	[illegible]
	C..	2,134	58	104	162	27.18	48.73	75.91	991	1,114	2,105	14.98	[illegible]	[illegible]
	I..	747	26	32	58	34.80	42.84	77.64	415	654	1,069	17.92	[illegible]	[illegible]
	T.	23,749	739	1,576	2,315	31.12	66.36	97.48	10,677	17,881	28,558	14.50	[illegible]	[illegible]
Nov..	W.	21,324	589	1,425	2,014	27.62	66.82	94.44	8,834	16,810	25,644	13.81	[illegible]	[illegible]
	C..	2,166	55	99	154	25.39	45.71	71.10	991	1,081	2,072	15.25	16.64	[illegible]
	I..	725	27	32	59	37.24	44.14	81.38	339	557	896	15.59	[illegible]	[illegible]
	T.	24,215	671	1,556	2,227	27.71	64.26	91.97	10,164	18,448	28,612	13.99	[illegible]	[illegible]
Dec...	W.	21,562	615	1,536	2,151	28.52	71.24	99.76	9,729	18,017	27,746	14.55	[illegible]	[illegible]
	C..	2,062	67	115	182	32.49	55.77	88.26	981	1,096	2,077	15.35	17.14	[illegible]
	I..	722	20	41	61	27.70	56.78	84.49	256	442	698	11.44	[illegible]	[illegible]
	T.	24,346	702	1,692	2,394	28.84	69.50	98.34	10,966	19,555	30,521	14.53	25.91	[illegible]
Year..	W.	21,437	7,790	19,509	27,299	363.39	910.06	1,273.45	107,616	203,793	811,409	13.72	[illegible]	[illegible]
	C..	2,036	788	1,773	2,561	387.03	870.83	1,257.86	11,192	17,536	28,728	15.02	[illegible]	[illegible]
	I..	730	297	591	888	406.85	809.59	1,216.44	4,345	6,333	10,678	16.26	[illegible]	[illegible]
	T.	24,203	8,875	21,873	30,748	366.69	903.73	1,270.42	123,153	227,662	350,815	13.90	[illegible]	[illegible]

TABLE XI.—*The rates per 1,000 of strength of admission, death, discharge an effectiveness of the U. S. Army and of the troops in the several departments for t 1892, as compared with those of the decade 1881–'90, and of certain foreign armie*

Names of armies or departments.	U. S. Army, 1892.				U. S. Army, white, 1		
Mean strength (corrected for time).	24,203.				21,437.		
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly noneffective.	Admissions.	Deaths.	Discharges.
Enteric fever	5.95	.48	....	.90	6.62	.50	....
Other specific contagious and infectious diseases, including erysipelas	93.71	.30	....	2.51	93.21	.30	....
Malarial fevers and resulting conditions	63.75	......	.04	1.76	68.43	......	.04
Typho-malarial fever	.29	.04	....	.05	.33	.04	....
Diarrhea, including cholera morbus.	108.03	......	....	1.01	113.17	......	....
Dysentery	2.81	......	.04	.12	2.57	......	.04
Other miasmatic diseases	.04	.04	....	.001	.05	.04	....
Gonorrhea and results	40.90	......	.37	2.36	41.42	......	.38
Syphilis and results	16.03	......	1.56	1.68	15.11	......	1.47
Other venereal diseases	19.79	......	.04	1.28	18.98	......	.04
Vaccina	45.45	......	....	1.26	47.07	......	....
Other enthetic diseases	1.74	......	....	.07	1.77	......	....
Alcoholism	37.23	.11	....	.45	41.19	.13	....
Other dietic diseases	.58	......	.04	.03	.61	......	.04
Rheumatism (including muscular).	71.52	.04	1.41	3.32	67.31	.04	1.42
Other constitutional diseases	3.93	.11	.26	.37	3.78	.13	.25
Developmental diseases	.62	......	.63	.06	.61	......	.67
Parasitic diseases	2.56	......	....	.07	2.85	......	....
Headache and neuralgia	40.37	......	.07	.66	40.03	......	.08
Other diseases of the nervous system	8.92	.56	2.23	.85	9.52	.59	2.43
Diseases of the eye	17.93	......	1.01	.64	16.42	......	1.01
Diseases of the ear	6.98	......	.52	.33	7.09	......	.59
Catarrhs and common colds	30.78	......	....	.30	32.37	......	....
Bronchitis	78.63	.04	.19	1.48	78.83	.04	.21
Pneumonia	3.43	.63	.04	.30	3.36	.67	.04
Pulmonary phthisis	4.34	.71	1.97	.90	3.27	.42	1.47
Pleuritis	1.82	.07	.07	.10	1.73	.08	....
Other diseases of the respiratory system	5.45	.04	.22	.23	5.18	.04	.21
Diseases of the heart and valves	5.21	.48	1.34	.46	5.50	.50	1.34
Other diseases of the circulatory system	1.24	.04	.30	.14	1.40	.04	.34
Tonsillitis	41.90	......	....	.63	42.26	......	....
Dyspepsia, colic, and constipation.	62.19	......	.11	.76	59.43	......	.08
Other diseases of the digestive system	69.66	.26	.97	1.79	69.89	.25	.96
Diseases of the kidneys	1.57	.30	.19	.15	1.68	.34	.21
Other diseases of the genito-urinary system (nonvenereal)	13.63	......	.56	.80	13.11	......	.63
Diseases of the locomotor system (excluding muscular rheumatism)	5.78.	......	1.34	.51	5.83	......	1.38
Diseases of the integumentary system	79.99	......	.34	2.17	82.05	......	.34
All other diseases	22.93	.07	.34	.95	22.76	.04	.38
Heat stroke	2.77	......	....	.04	2.94	......	....
Frostbite and general freezing	2.73	......	.04	.13	2.01	......	.04
Contusions and sprains	134.32	......	.19	3.24	131.27	......	.21
Dislocations	2.56	......	.15	.19	2.43	......	.13
Fractures (not gunshot)	6.98	.15	.45	1.36	7.00	.13	.46
ncised, lacerated, contused, and punctured wounds	55.32	......	.19	1.55	53.09	......	.21
hot wounds	3.22	1.01	.60	.50	2.80	.80	.59
All other injuries	44.83	.93	.56	1.12	45.16	1.01	.59
Total for disease	1,017.68	4.36	16.19	31.48	1,026.78	4.23	16.04
Total for injuries	252.74	2.08	2.16	8.12	246.68	1.93	2.22
Total for all causes	1,270.42	6.44	18.35	39.60	1,273.45	6.15	18.26
nteric fever (including typho-malarial fever)	6.24	.52	....	.95	6.95	.54	....
ther specific contagious and infectious diseases (including erysipelas and tonsillitis)	135.61	.34	....	3.14	135.47	.34	....
ther diseases of the digestive system (excluding hernia)	67.64	.26	.19	1.57	67.88	.25	.21
ernia	2.02	......	.78	.22	2.01	......	.75
Total for disease (excluding hernia)	1,015.66	4.36	15.41	31.26	1,024.77	4.23	15.29
Total for injuries (including hernia)	254.76	2.08	2.94	8.34	248.69	1.88	2.97

TABLE XI.—*The rates per 1,000 of strength, of admission, death, discharge and noneffectiveness of the U. S. Army, etc.*—Continued.

Names of armies or departments.	U. S. Army, colored, 1892.				U. S. Army, Indian. 1892.			
Mean strength (corrected for time).	2,036.				730.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly noneffective.	Admissions.	Deaths.	Discharges.	Constantly noneffective.
Enteric fever	.98	.45	......	.24	......	......	......	......
Other specific contagious and infectious diseases, including erysipelas	108.05	.45	......	2.52	68.49	......	......	[illegible]
Malarial fevers and resulting conditions	26.03	......	......	.77	31.51	......	......	.44
Typho-malarial fever	......	......	......	......	......	......	......	......
Diarrhea, including cholera morbus	75.64	......	......	.68	47.95	......	......	[illegible]
Dysentery	3.44	......	......	.26	8.22	......	......	[illegible]
Other miasmatic diseases	......	......	......	......	......	......	......	......
Gonorrhea and results	32.91	......	.45	1.85	47.95	......	......	[illegible]
Syphilis and results	25.54	......	3.18	2.53	16.44	......	......	[illegible]
Other venereal diseases	28.49	......	......	1.79	19.18	......	......	[illegible]
Vaccina	27.51	......	......	.69	47.95	......	......	1.34
Other enthetic diseases	1.96	......	......	.14	......	......	......	
Alcoholism	8.35	......	......	.07	1.37	......	......	[illegible]
Other dietic diseases	.49	......	......	.02	......	......	......	......
Rheumatism (including muscular)	116.41	......	.91	4.92	69.87	......	2.55	[illegible]
Other constitutional diseases	2.46	......	.45	.26	12.33	......	......	[illegible]
Developmental diseases	.49	......	......	.02	1.37	......	1.28	[illegible]
Parasitic diseases	.49	......	......	.01	......	......	......	......
Headache and neuralgia	45.68	......	......	.79	35.62	......	......	[illegible]
Other diseases of the nervous system	4.42	......	.45	.41	4.11	1.28	1.28	[illegible]
Diseases of the eye	19.65	......	.91	.78	57.53	......	1.28	[illegible]
Diseases of the ear	4.91	......	......	.12	9.59	......	......	[illegible]
Catarrhs and common colds	19.16	......	......	.16	16.44	......	......	[illegible]
Bronchitis	81.54	......	......	1.40	64.38	......	......	[illegible]
Pneumonia	3.93	.45	......	.17	4.11	......	......	[illegible]
Pulmonary phthisis	4.42	.91	2.27	.98	35.62	8.94	16.60	[illegible]
Pleuritis	1.96	......	......	.14	4.11	......	2.55	[illegible]
Other diseases of the respiratory system	6.88	......	......	.17	9.59	......	1.28	[illegible]
Diseases of the heart and valves	3.44	.45	1.82	.26	1.37	......	......	[illegible]
Other diseases of the circulatory system	......	......	......	......	......	......	......	......
Tonsillitis	40.28	......	......	.65	35.62	......	......	[illegible]
Dyspepsia, colic, and constipation	85.47	......	.45	.83	78.08	......	......	[illegible]
Other diseases of the digestive system	74.66	.45	1.36	1.72	49.32	......	......	1.24
Diseases of the kidneys	.98	......	......	.11	......	......	......	......
Other diseases of the genito-urinary system (nonvenereal)	18.66	......	......	1.38	15.07	......	......	.54
Diseases of the locomotor system (excluding muscular rheumatism)	5.89	......	.91	.47	4.11	......	1.28	[illegible]
Diseases of the integumentary system	58.94	......	.45	1.54	78.08	......	......	[illegible]
All other diseases	26.03	......	......	.91	19.18	1.28	......	[illegible]
Heat stroke	1.96	......	......	.01	......	......	......	......
Frostbite and general freezing	10.80	......	......	.63	1.37	......	......	[illegible]
Contusions and sprains	167.49	......	......	4.05	131.51	......	......	[illegible]
Dislocations	2.46	......	.45	.08	6.85	......	......	[illegible]
Fractures (not gunshot)	4.42	......	.45	.98	13.70	1.28	......	[illegible]
Incised, lacerated, contused, and punctured wounds	59.92	......	......	1.57	108.23	......	......	[illegible]
Shot wounds	5.89	1.36	......	.54	8.22	6.39	2.55	[illegible]
All other injuries	38.80	.45	......	.92	52.05	1.28	1.28	[illegible]
Total for disease	966.11	3.18	13.63	29.76	894.52	11.49	28.09	29.44
Total for injuries	291.75	1.82	.91	8.79	321.92	8.94	3.83	[illegible]
Total for all causes	1,257.86	5.00	14.54	38.55	1,216.44	20.43	31.93	[illegible]
Enteric fever, including typho-malarial fever	.98	.45	......	.24	......	......	......	......
Other specific contagious and infectious diseases, including erysipelas and tonsillitis	148.33	.45	......	3.17	104.11	......	......	[illegible]
Other diseases of the digestive system (excluding hernia)	71.71	.45	......	1.35	49.32	......	......	1.24
Hernia	2.95	......	1.36	.37	......	......	......	......
Total for disease (excluding hernia)	963.16	3.18	12.27	29.39	894.52	11.49	28.09	29.44
Total for injuries (including hernia)	294.70	1.82	2.27	9.16	321.92	8.94	3.83	[illegible]

TABLE XI.—*The rates per 1,000 of strength, of admission, death, discharge and non-effectiveness of the U. S. Army, etc.*—Continued.

Names of armies or departments.	U.S.Army, 1881-1890.			U. S. Army, white, 1881-1890.			U. S. Army, colored, 1881-1890.		
Mean strength (corrected for time).	23,945.			21,640.			2,305.		
Causes of admission to sick report.	Admissions.	Deaths	Discharges.	Admissions.	Deaths.	Discharges.	Admissions.	Deaths.	Discharges.
Enteric fever	5.42	.74	.04	5.68	.76	.04	2.91	.59	......
Other specific contagious and infectious diseases, including erysipelas	34.15	.17	.02	32.30	.17	.03	51.58	.16	......
Malarial fevers and resulting conditions	142.72	.24	.16	142.57	.23	.17	143.99	.36	.12
Typho-malarial fever	1.86	.23	......	1.90	.20	......	1.43	.51	......
Diarrhea, including cholera morbus	150.74	.06	.26	150.93	.07	.27	148.98	......	.24
Dysentery	11.56	.16	.20	10.90	.15	.20	17.70	.28	.24
Other miasmatic diseases	.04	.04	......	.03	.03	......	.09	.08	......
Gonorrhea and results	34.34	......	.28	34.26	......	.30	35.19	......	.08
Syphilis and results	34.72	.02	3.47	33.15	.02	3.33	49.50	.04	4.85
Other venereal diseases	8.25	......	.12	8.20	......	.11	8.68	......	.12
Vaccina	16.01	......	......	16.10	......	......	15.14	......	......
Other enthetic diseases	2.44	.01	.01	2.33	.01	.01	3.47	......	......
Alcoholism	52.21	.20	.31	57.35	.22	.34	3.90	......	.04
Other dietic diseases	.57	.01	.07	.60	.01	.08	.35	......	.04
Rheumatism (including muscular)	102.00	.04	2.84	98.22	.04	2.79	137.48	.04	3.27
Other constitutional diseases	9.30	.21	.68	9.13	.20	.63	10.93	.36	1.18
Developmental diseases	......	......	......	......	......	......	......	......	......
Parasitic diseases	3.32	......	.004	3.52	......	.004	1.48	......	......
Headache and neuralgia	80.08	......	.35	76.82	......	.35	110.67	......	.39
Other diseases of the nervous system	11.61	.54	3.70	11.86	.55	3.77	9.28	.47	3.00
Diseases of the eye	22.26	......	1.33	21.71	......	1.32	27.37	......	1.50
Diseases of the ear	8.46	.01	.84	8.97	.01	.89	3.64	......	.36
Catarrhs and common colds	74.30	......	.03	72.78	......	.03	88.63	......	.04
Bronchitis	70.06	.08	.52	69.09	.09	.54	79.22	......	.32
Pneumonia	4.65	.79	.13	4.32	.68	.12	7.81	1.85	.24
Pulmonary phthisis	3.47	.57	1.99	3.39	.54	1.98	4.29	.87	2.13
Pleuritis	3.24	.03	.12	2.85	.03	.11	6.90	.08	.16
Other diseases of the respiratory system	8.52	.10	.48	8.10	.09	.50	1.26	.20	.28
Diseases of the heart and valves	3.03	.28	1.46	3.04	.29	1.49	2.95	.20	1.18
Other diseases of the circulatory system	5.46	.36	1.04	5.69	.35	1.10	3.34	.47	.51
Tonsillitis	50.91	......	.01	48.92	......	.01	69.59	......	......
Dyspepsia, colic, and constipation	73.60	......	.25	71.06	......	.26	97.44	......	.16
Other diseases of the digestive system	57.99	.54	2.06	57.28	.56	2.11	64.60	.36	1.66
Diseases of the kidneys	1.49	.24	.27	1.47	.24	.25	1.65	.24	.39
Other diseases of the genito-urinary system (nonvenereal)	17.25	.05	1.42	16.83	.06	1.38	21.17	......	1.82
Diseases of the locomotor system (excluding muscular rheumatism)	5.97	.01	1.33	5.93	004	1.30	6.29	.04	1.58
Diseases of the integumentary system	91.06	.01	.40	93.32	.01	.40	69.85	......	.39
All other diseases	11.41	.05	.99	11.27	.05	1.03	1.29	.08	.59
Heat stroke	1.86	.02	.03	2.00	.03	.03	.56	......	.04
Frostbite and general freezing	6.22	.07	.10	4.41	.08	.08	23.21	.04	.36
Contusions and sprains	143.96	.02	.54	142.63	.01	.52	156.48	.08	.75
Dislocations	2.48	.01	.16	2.51	.01	.17	2.21	......	.12
Fractures (not gunshot)	6.75	.11	.74	6.93	.10	.77	5.08	.16	.47
Incised, lacerated, contused, and punctured wounds	43.36	.12	.28	41.50	.13	.26	60.87	.08	.43
Shot wounds	4.85	1.26	.98	4.31	1.20	.91	9.93	1.82	1.58
All other injuries	35.68	1.32	.66	35.92	1.36	.65	33.45	.99	.75
Total for disease	1,214.49	5.81	27.20	1,201.83	5.66	27.23	1,333.36	7.26	26.87
Total for injuries	245.16	2.93	3.50	240.19	2.91	3.39	291.80	3.16	4.50
Total for all causes	1,459.65	8.75	30.70	1,442.02	8.57	30.62	1,625.16	10.42	31.37
Enteric fever, including typho-malarial fever	7.28	.97	.04	7.58	.96	.04	4.34	1.10	......
Other specific contagious and infectious diseases, including erysipelas and tonsillitis	85.06	.17	.03	81.22	.17	.04	121.17	.16	......
Other diseases of the digestive system (excluding hernia)	55.02	.53	.68	54.30	.55	.70	61.74	.36	.56
Hernia	2.97	.01	1.38	2.98	.01	1.41	2.86	......	1.10
Total for disease (excluding hernia)	1,211.52	5.80	25.82	1,198.85	5.65	25.82	1,330.50	7.26	25.77
Total for injuries (including hernia)	248.13	2.94	4.88	243.17	2.92	4.80	294.06	3.16	5.

TABLE XI.—*The rates per 1,000 of strength, of admission, death, discharge and non-effectiveness of the U. S. Army, etc.*—Continued.

Names of armies or departments.	Department of the East.				Department of the Missouri.				Department of Dakota.			
Mean strength (corrected for time).	6,613.				4,178.				3,233.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Pneumonia	3.18	.76		.28	2.87	.24		.24	4.33	.62		.37
Pulmonary phthisis	3.93	1.06	1.66	.60	2.39	.48	1.20	.26	5.57	.62	3.40	.71
Pleuritis	1.81			.04	2.87		.48	.26	.62			.07
Other diseases of the respiratory system	4.54	.15	.30	.15	8.38			.46	3.40		.31	.15
Diseases of the heart and valves	6.05	.91	1.81	.50	3.59		1.20	.35	4.05	.31	.62	.49
Other diseases of the circulatory system	1.81		.45	.13	.24		.72	.05	.93			.06
Tonsillitis	47.03			.74	39.25			.54	43.30			.57
Dyspepsia, colic, and constipation	68.81		.30	.80	60.80			.65	71.45			[illegible]
Other diseases of the digestive system	75.15	.30	1.06	1.65	64.86		.24	1.74	94.03	.31	1.24	2.06
Diseases of the kidneys	2.27	.45	.15	.13	2.15	.48	.48	.09	.93	.31	.31	.07
Other diseases of the genito-urinary system (nonvenereal)	12.70		.30	.61	13.40		.96	.89	15.15		.31	1.23
Diseases of the locomotor system (excluding muscular rheumatism)	4.23		1.51	.37	6.94		1.44	.50	4.64		1.55	.45
Diseases of the integumentary system	91.18		.45	2.16	87.84		.24	2.54	61.24		.31	1.57
All other diseases	22.68		.30	.84	16.99			.66	17.01		.62	1.09
Heat stroke	4.23			.04	3.11			.05	1.86			.02
Frostbite and general freezing	.76			.01	2.15			.03	8.35			.34
Contusions and sprains	134.13		.45	2.85	135.24		.24	3.12	152.18			4.27
Dislocations	1.81		.15	.15	2.63		.24	.24	1.86			.12
Fractures (not gunshot)	5.75		.15	.92	7.42	.48	.72	1.46	7.42		.62	1.46
Incised, lacerated, contused, and punctured wounds	51.87		.45	1.45	46.43			1.15	66.50			1.85
Shot wounds	2.42	.91	.45	.39	2.15	.72	.96	.41	4.33	1.24	.93	.54
All other injuries	39.92	1.36	.45	.78	44.52	1.20	.24	1.25	49.49	.62	.93	1.46
Total for disease	1,274.61	5.90	16.18	35.97	1,007.42	3.35	13.16	28.12	984.84	3.71	17.63	30.21
Total for injuries	240.89	2.27	2.12	6.59	248.65	2.39	2.39	7.72	291.99	1.86	2.47	10.08
Total for all causes	1,515.50	8.17	18.30	42.56	1,251.08	5.74	15.56	35.84	1,276.83	5.57	20.11	40.29
Enteric fever, including typho-malarial fever	7.41	.45		1.24	10.77	1.20		1.45	3.40	.31		.54
Other specific contagious and infectious diseases, including erysipelas and tonsillitis	157.87	.15		4.35	141.93	.48		2.64	178.15	.62		3.53
Other diseases of the digestive system, excluding hernia	72.73	.30	.15	1.43	64.14			1.49	93.41	.31	.62	1.99
Hernia	2.42		.91	.22	.72		.24	.25	.62		.62	.07
Total for disease, excluding hernia	1,272.19	5.90	15.27	35.75	1,006.70	3.35	12.92	27.87	984.22	3.71	17.01	30.14
Total for injuries, including hernia	343.31	2.27	3.03	6.81	244.37	2.39	2.63	7.97	292.61	1.86	3.09	10.15

TABLE XI.—*The rates per 1,000 of strength, of admission, death, discharge and non-effectiveness of the U. S. Army, etc.*—Continued.

Names of armies or departments.	Department of the Platte.				Department of Texas.				Department of Arizona.			
Mean strength (corrected for time).	3,571.				1,481.				2,430.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Enteric fever	2.52	.56	....	.37	6.75	1.35	....	.89	7.00	.41	....	.99
Other specific contagious and infectious diseases, including erysipelas	69.45	....	....	1.63	121.53	.68	....	4.44	46.91	....	....	1.35
Malarial fevers and resulting ing conditions	25.20	....	....	.62	117.48	....	....	5.90	31.27	....	....	1.15
Typho-malarial fever	....	....	....	....	....	....	....	....	.41	....	....	.11
Diarrhea, including cholera morbus	78.41	....	....	.55	158.07	....	....	1.61	109.46	....	....	1.03
Dysentery	3.36	....	....	.04	4.05	....	....	.09	3.70	....	....	.21
Other miasmatic diseases	....	.28	....	....	....	....	....	....	....	....	....	....
Gonorrhea and results	33.88	....	....	1.66	38.49	....	1.35	3.14	36.21	....	.41	1.82
Syphilis and results	9.24	....	.84	.99	26.33	....	2.03	2.82	16.87	....	3.29	1.40
Other venereal diseases	14.84	....	....	.88	41.19	....	....	2.05	13.17	....	....	1.16
Vaccina	17.36	....	....	.30	18.23	....	....	.39	30.04	....	....	.67
Other enthetic diseases	.28	....	....	.01	8.78	....	....	.21	2.06	....	....	.13
Alcoholism	43.40	....	....	.59	28.36	....	....	.32	30.04	....	....	.32
Other dietic diseases	.84	....	....	.02	....	....	....	....	.82	....	....	.03
Rheumatism (including muscular)	76.73	....	.28	2.76	54.70	....	1.35	2.99	100.82	....	1.23	3.92
Other constitutional diseases	3.08	.28	.84	.52	2.70	....	.68	.50	3.70	....	.41	.37
Developmental diseases	.28	....	.56	.04	.68	....	1.35	.04	1.23	....	.41	.16
Parasitic diseases	.84	....	....	.01	3.38	....	....	.13	2.88	....	....	.08
Headache and neuralgia	29.68	....	....	.47	36.46	....	.68	.61	46.09	....	....	.67
Other diseases of the nervous system	5.04	.28	.28	.27	13.50	1.35	.68	1.59	9.88	.82	.82	.97
Diseases of the eye	18.20	....	.84	.50	20.26	....	1.35	.78	22.22	....	1.23	.66
Diseases of the ear	6.16	....	.56	.33	8.10	....	.68	.42	6.58	....	....	.13
Catarrhs and common colds	36.68	....	....	.44	12.15	....	....	.09	20.16	....	....	.23
Bronchitis	60.77	....	....	1.03	60.77	....	....	1.04	84.77	....	1.23	1.86
Pneumonia	3.08	.28	....	.24	2.70	.68	....	.20	5.35	1.65	....	.40
Pulmonary phthisis	5.88	.56	2.80	1.00	4.73	1.35	2.03	1.58	4.94	1.23	2.06	2.80
Pleuritis	.56	....	....	.04	1.35	....	....	.06	4.11	.82	....	.17
Other diseases of the respiratory system	4.48	....	....	.22	4.73	....	.68	.11	7.41	....	....	.10
Diseases of the heart and valves	4.48	1.12	.84	.33	3.38	....	1.35	.44	6.17	....	1.65	.57
Other diseases of the circulatory system	1.40	.28	....	.31	2.70	....	1.35	.22	1.65	....	....	.02
Tonsillitis	58.81	....	....	.89	19.58	....	....	.32	46.50	....	....	.68
Dyspepsia, colic, and constipation	39.48	....	....	.45	70.22	....	.68	1.13	81.89	....	....	.85
Other diseases of the digestive system	63.29	....	.84	1.61	72.25	1.35	3.38	3.53	72.02	.41	1.23	1.94
Diseases of the kidneys	.56	....	....	.20	.68	....	....	.01	1.65	....	.41	.11
Other diseases of the genito-urinary system (nonvenereal)	12.60	....	.56	.54	16.20	....	.68	.66	16.05	....	.41	1.02
Diseases of the locomotor system (excluding muscular rheumatism)	8.40	....	.28	.66	5.40	....	2.03	.43	6.58	....	3.29	.68
Diseases of the integumentary system	68.04	....	.28	1.79	133.03	....	....	2.87	69.96	....	1.23	2.52
All other diseases	25.76	....	....	.87	56.72	.68	2.03	2.00	25.10	.41	....	.92
Heat stroke	1.96	....	....	.02	2.70	....	....	.03	1.23	....	....	.02
Frostbite and general freezing	6.72	....	.28	.33	....	....	....	....	.41	....	....	.30
Contusions and sprains	128.53	....	....	2.99	133.03	....	....	4.00	139.50	....	....	3.59
Dislocations	3.36	....	.28	.12	4.73	....	....	.25	2.47	....	.41	.25
Fractures (not gunshot)	9.24	....	.56	1.67	10.80	.68	.68	2.64	3.70	.41	....	.76
Incised, lacerated, contused, and punctured wounds	50.69	....	.28	1.63	64.82	....	.68	1.85	69.55	....	....	1.84
Shot wounds	5.60	1.96	.56	.80	4.73	2.70	.68	.53	4.11	.82	1.23	.96
All other injuries	40.05	.56	.56	1.00	63.47	.68	1.35	1.36	54.73	1.23	.82	1.63
Total for disease	833.10	3.64	9.80	23.17	1,176.24	7.43	24.31	43.59	975.72	5.76	19.34	32.20
Total for injuries	246.15	2.52	2.52	8.57	284.27	4.05	3.38	10.66	275.72	2.47	2.47	9.35
Total for all causes	1,079.25	6.16	12.32	31.73	1,460.50	11.48	27.68	54.25	1,251.44	8.23	21.81	41.[illegible]5

TABLE XI.—*The rates per 1,000 of strength, of admission, death, discharge and non-effectiveness of the U. S. Army, etc.*—Continued.

Names of armies or departments.	Department of the Platte.				Department of Texas.				Department of Arizona.			
Mean strength (corrected for time).	3,571.				1,481.				2,430.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Enteric fever, including typho-malarial fever	2.52	.56	.....	.37	6.75	1.35	.....	.89	7.41	.41	.....	[illegible]
Other specific contagious and infectious diseases, including erysipelas and tonsillitis	128.26	.28	.....	2.52	141.11	.68	.....	4.76	93.41	....	.....	[illegible]
Other diseases of the digestive system, excluding hernia	59.37	....	.....	1.27	69.55	1.35	.68	3.02	69.96	.41	.....	[illegible]
Hernia	3.92	....	.84	.34	2.70	....	2.70	.51	2.06	....	1.23	[illegible]
Total for disease, excluding hernia	829.18	3.64	8.96	22.83	1,173.54	7.43	21.61	43.08	973.66	5.76	18.11	[illegible]
Total for injuries, including hernia	250.07	2.52	3.36	8.91	286.97	4.05	6.08	11.17	277.78	2.47	3.70	[illegible]

TABLE XI.—*The rates per 1,000 of strength, of admission, death, discharge and noneffectiveness of the U. S. Army, etc.*—Continued.

Names of armies or departments.	Department of California.				Department of the Columbia.			
Mean strength (corrected for time).	1,300.				1,364.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly noneffective.	Admissions.	Deaths.	Discharges.	Constantly noneffective.
Enteric fever					6.60			1.28
Other specific contagious and infectious diseases, including erysipelas	50.00			1.18	45.45			.97
Malarial fevers and resulting conditions	26.15			.82	21.26			1.44
Typho-malarial fever								
Diarrhea, including cholera morbus	42.31			.51	37.39			.83
Dysentery	.77			.01				
ther miasmatic diseases								
Gonorrhea and results	55.38		.77	3.95	20.53			.88
yphilis and results	10.00		1.54	1.18	4.40			.66
ther venereal diseases	26.15			1.18	10.26			.48
accina	28.46			.61	21.26			.50
ther enthetic diseases	2.31			.06	2.20			.10
lcoholism	21.54			.22	30.06			.33
ther dietic diseases	2.31			.09	.73			.10
heumatism (including muscular)	53.07		1.54	2.06	45.45		1.47	2.10
ther constitutional diseases	4.62		.77	.19	.73			.11
evelopmental diseases	.77			.03				
arasitic diseases	2.31			.07	1.47			.03
eadache and neuralgia	28.46			.53	13.93			.39
ther diseases of the nervous system	10.77			1.25	7.33	.73	.73	.36
iseases of the eye	19.23		.77	.64	16.86		2.93	.90
iseases of the ear	9.23		.77	.43	3.67			.07
atarrhs and common colds	21.54			.19				
onchitis	75.38			1.86	68.91		.73	1.37
eumonia	.77			.14	5.13	1.47	.73	.61
lmonary phthisis	4.62	.77	3.08	.76	2.93		1.47	.54
euritis	1.54			.09	.73			.03
her diseases of the respiratory system	4.62		.77	.38	6.60			.14
seases of the heart and valves	5.38	.77	.77	.14	6.60		3.67	.78
her diseases of the circulatory system	.77			.09	.73			.44
nsillitis	13.08			.21	21.99			.41
spepsia, colic, and constipation	39.23			.38	50.59			.44
her diseases of the digestive system	40.77			.63	37.39		2.20	1.42
seases of the kidneys	1.54			.47	.73	.73		.01
her diseases of the genito-urinary system (nonvenereal)	13.08		2.31	.68	11.73			.62
seases of the locomotor system (excluding muscular rheumatism)	3.85		.77	.41	6.60		1.47	.80
seases of the integumentary system	69.23			1.98	49.12			1.33
other diseases	17.69		1.54	1.05	13.93			1.13
at stroke					4.40			.09
stbite and general freezing								
ntusions and sprains	140.00			3.39	95.31		.73	2.34
slocations	5.38			.35	.73			.20
actures (not gunshot)	6.15			1.27	7.33		1.47	1.92
ised, lacerated, contused, and punctured wounds	50.00			1.63	55.72			1.50
t wounds	.77	.77		.05	.73			.004
other injuries	43.85	1.54	.77	1.01	35.19	.73	.73	.68
Total for disease	706.92	1.54	15.38	24.46	573.31	2.93	15.40	21.14
Total for injuries	246.15	2.31	.77	7.70	199.41	.73	2.93	6.74
Total for all causes	953.08	3.85	16.15	32.16	772.73	3.67	18.33	27.88

TABLE XI.—*The rates per 1,000 of strength, of admission, death, discharge and non-ef[illegible]tiveness of the U. S. Army, etc.*—Continued.

Names of armies or departments.	Department of California.				Department of the Col[illegible]			
Mean strength (corrected for time).	1,300.				1,364.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-[illegible]
Enteric fever, including typho-malarial fever	....	....	....	....	6.60	....	....	[illegible]
Other specific contagious and infectious diseases, including erysipelas and tonsillitis	63.08	....	....	1.39	67.44	....	....	[illegible]
Other diseases of the digestive system, excluding hernia	39.23	....	....	.62	35.19	....	[illegible]	[illegible]
Hernia	1.54	....	....	.01	2.20	....	1.47	[illegible]
Total for disease, excluding hernia	705.38	1.54	15.38	24.45	571.11	2.93	13.93	[illegible]
Total for injuries, including hernia	247.69	2.31	.77	7.71	201.61	.73	4.40	[illegible]

TABLE XII.—*Comparison of the prevalence of specific febrile and acute diseases in vari[illegible] armies.*

Diseases.	United States.			Austria-Hungary, 1891.	Great Britain, 1890.	Italy, 1891.	Pruss[illegible]
	1892.	1891.	1881-1890.				
Cerebro-spinal fever	.08	.09	.09	....	....	.09	[illegible]
Chicken pox	.54	.69	.10	....	.04	.11	[illegible]
Cholera	....	....	....	....	....	....	[illegible]
Diphtheria	.45	.21	.37	.13	.06	.11	[illegible]
Enteric fever	5.95	3.95	5.42	4.32	1.26	5.63	[illegible]
Influenza	74.08	132.67	20.68	3.81	65.76	.14	[illegible]
Measles	7.73	7.74	3.39	1.71	1.09	8.23	[illegible]
Mumps	6.16	2.58	3.93	1.24	.81	3.94	[illegible]
Scarlet fever	.37	.13	.19	.29	2.43	.74	[illegible]
Smallpox	.04	.22	.10	.18	....	.41	[illegible]
Varioloid	....	.09	.01	....	2.62		...
Typhus fever	....	....	.07	.04	....	.02	
Whooping cough	.25	.09	.10	....	....	....	....
Yellow fever	....	....	.16	....	....	....	....
Tonsillitis	41.90	41.73	50.91	42.82	(*)	12.44	[illegible]

* Not enumerated separately.

TABLE XIII.—*Distribution of specific febrile diseases, etc., at United States military posts during the year 1892.*

Posts.	Specific febrile and acute infectious diseases, excluding influenza, erysipelas, and tonsillitis.								
	Cerebro-spinal fever.	Chicken pox.	Dengue.	Diphtheria.	Enteric fever, including typho-malarial fever.	Measles.	Mumps.	Scarlet fever.	Smallpox.
olumbus Barracks, Ohio					1	52	43		
ort McIntosh, Tex		1	43		3				
ort Yates, N. Dak					8	6	19		
ort Monroe, Va					6	13	10		
ort Sam Houston, Tex			21		1	2			
ort Reno, Okla					23				
ort Logan, Colo					1	8	10	2	
adison Barracks, N. Y					19				
ort Thomas, Ky					2	14	1		
ort Leavenworth, Kans					12		2		
efferson Barracks, Mo					2	7	5		
ort McPherson, Ga					4	2	8		
ort McKinney, Wyo							11		
an Carlos, Ariz					10		1		
est Point, N. Y				1		10			
avids Island, N. Y					4	6			
ort Keogh, Mont		1			1	7	1		
ort Riley, Kans		2			1	6		1	
ort Grant, Ariz				6	2				
ort Sheridan, Ill					2	2	5		
ort Columbus, N. Y		2			1		5		
ort Myer, Va					4			4	
ort Sill, Okla					3	4			
ort Bliss, Tex						6			
ackson Barracks, La							6		
amp Pilot Butte, Wyo					3	3			
ort Wayne, Mich	1						5		
ort Wingate, N. Mex						6			
ort Douglas, Utah				1	2	2			
ort Niobrara, Nebr				1		3	1		
ort Omaha, Nebr						5			
residio of San Francisco, Cal						2	3		
ort Sherman, Idaho					5				
ngel Island, Cal						1	2		
ort Clark, Tex					4				
ort Custer, Mont									
ort D. A. Russell, Wyo						4			
ount Vernon Barracks, Ala		3			1				
enicia Barracks, Cal						3			
ort Marcy, N. Mex					2				1
ort Robinson, Nebr					2		1		
ort Snelling, Minn						1	2		
ort Warren, Mass						3			
ort Apache, Ariz					3				
ort Adams, R. I					1	1			
ort Assinniboine, Mont		1			1				
icago, Ill					1		1		
mp at Eagle Pass, Tex					1			1	
ort Hamilton, N. Y						2			
ort McHenry, Md					1		1		
attsburg Barracks, N. Y									
ort Walla Walla, Wash					2				
eld, Department of California		1					1		
eld, Department of the East						2			
eld, Department of the Missouri					1		1		
ort Bayard, N. Mex		1							
oise Barracks, Idaho					1				
ort Buford, N. Dak							1		
olumbia Arsenal, Tenn							1		
& N. G. H. Hot Springs, Ark						1			
avenworth Prison, Kans	1								
ort Meade, S. Dak				1					
ort Missoula, Mont							1		
ewport Barracks, Ky					1				
ort Niagara, N. Y					1				
mp Oklahoma, Okla						1			
ort Randall, S. Dak						1			

TABLE XIII.—*Distribution of specific febrile diseases, etc., at United States militar posts during the year 1892*—Continued.

Posts.	Specific febrile and acute infectious diseases, (excluding in-fluenza, erysipelas, and tonsillitis).							
	Cerebro-spinal fever.	Chicken pox.	Dengue.	Diphtheria.	Enteric fever (including typho-malarial fever).	Measles.	Mumps.	Scarlet fever.
Fort Ringgold, Tex					1			
San Diego Barracks, Cal					1			
Fort Stanton, N. Mex				1				
Fort Trumbull, Conn					1			
Fort Washakie, Wyo		1						
Watervliet Arsenal, N. Y					1			
Fort Wood, N. Y								1
Fort Yellowstone, Wyo						1		
Field, Department of the Columbia					1			
Field, Department of Dakota					1			
Field, Department of the Platte					1			
Field, Department of Texas							1	
Washington Barracks, D. C					1			
Fort Supply, Ind. T								
Fort Sully, S. Dak								
Vancouver Barracks, Wash								
Willets Point, N. Y								
St. Francis Barracks, Fla								
Fort Barrancas, Fla								
Camp Poplar River, Mont								
Rock Island Arsenal, Ill								
Fort Preble, Me								
Fort Du Chesne, Utah								
Fort Bidwell, Cal								
Fort Mackinac, Mich								
Fort Wadsworth, N. Y								
Whipple Barracks, Ariz								
Sandy Hook, N. J								
Allegheny Arsenal, Pa								
Fort Brown, Tex								
Fort Canby, Wash								
Indianapolis Arsenal, Ind								
Augusta Arsenal, Ga								
Kennebec Arsenal, Me								
Watertown Arsenal, Mass								
Alcatraz Island, Cal								
Frankford Arsenal, Pa								
San Antonio, Tex								
Fort Bowie, Ariz								
Camp Pena Colorado, Tex								
Fort Townsend, Wash								
Fort Brady, Mich								
Fort Sidney, Nebr								
Fort Porter, N. Y								
Fort Ontario, N. Y								
Fort Huachuca, Ariz								
Fort Hancock, Tex								
Fort Gaston, Cal								
Fort Mason, Cal								
Fort Pembina, N. Dak								
Fort Spokane, Wash								
Field, Department of Arizona								
Total	2	13	64	11	151	187	149	9
Admission rates per 1,000 of mean strength	.08	.54	2.64	.45	6.24	7.73	6.16	.37

ABLE XIII.—*Distribution of specific febrile diseases, etc., at United States military posts during the year 1892.*—Continued.

Posts.	Specific febrile and acute infectious diseases, excluding influenza, erysipelas, and tonsillitis.				Influenza.	Erysipelas.	Tonsillitis.	Aggregate.	Ratio per 1,000 of mean strength.
	Whooping cough.	Other infectious diseases.	Total.	Ratio per 1,000 of mean strength.					
lumbus Barracks, Ohio			96	162.44	45	1	52	194	328.26
rt McIntosh, Tex			47	315.44				47	315.44
rt Yates, N. Dak			33	127.41		1	8	42	162.16
rt Monroe, Va	1		30	80.00	44	1	19	94	250.67
rt Sam Houston, Tex			24	56.21	43		10	77	180.33
rt Reno, Okla			23	72.78	58	1	6	88	278.48
rt Logan, Colo			21	63.25	2	2	31	56	168.67
adison Barracks, N. Y			19	57.06			5	24	72.07
rt Thomas, Ky			17	63.43	4		13	34	126.87
t Leavenworth, Kans		2	16	22.35	20	1	42	79	110.34
ferson Barracks, Mo			14	27.67		1	21	36	71.15
rt McPherson, Ga			14	35.09	82		24	120	300.75
rt McKinney, Wyo			11	40.74	34	1	25	71	262.96
Carlos, Ariz			11	65.87			5	16	95.81
st Point, N. Y			11	29.33	52		19	82	218.67
vids Island, N. Y			10	18.02	3		25	38	68.47
rt Keogh, Mont			10	25.91	32	1	9	52	134.71
rt Riley, Kans			10	14.58		1	34	45	65.60
t Grant, Ariz		1	9	31.47	23		7	39	136.36
t Sheridan, Ill			9	17.08	78	1	7	95	180.27
t Columbus, N. Y			8	32.79	5		7	20	81.97
t Myer, Va			8	33.90	12		7	27	114.41
t Sill, Okla			7	20.23	8		17	32	92.49
t Bliss, Tex			6	56.07	3	2	4	15	140.19
kson Barracks, La			6	56.61	2		4	12	113.21
np Pilot Butte, Wyo			6	125.00	1		4	11	229.17
t Wayne, Mich			6	25.75	38		15	59	253.22
t Wingate, N. Mex			6	16.76			22	28	78.21
t Douglas, Utah			5	10.31	17	2	35	59	121.65
t Niobrara, Nebr			5	14.88	39		11	55	163.69
t Omaha, Nebr			5	10.35	12		13	30	62.11
sidio of San Francisco, Cal			5	10.75	31	1	6	43	92.47
t Sherman, Idaho			5	21.55	6		7	18	77.58
gel Island, Cal	1		4	14.49	5	1	3	13	47.10
t Clark, Tex			4	12.46	12		8	24	74.77
t Custer, Mont	4		4	10.13	141		13	158	400.00
t D. A. Russell, Wyo			4	9.32		1	30	35	81.59
nt Vernon Barracks, Ala			4	22.10	46		8	58	320.44
icia Barracks, Cal			3	22.73			3	6	45.46
t Marcy, N. Mex			3	24.39	1		13	17	138.21
t Robinson, Nebr			3	8.60	45		9	57	163.32
Snelling, Minn			3	7.28	4		30	37	89.81
Warren, Mass			3	26.09	2		1	6	52.14
Apache, Ariz			3	15.23	1		10	14	241.97
Adams, R. I			2	8.06	34		24	60	71.01
Assiniboine, Mont			2	4.36	101	1	8	112	244.07
ago, Ill			2	38.46				2	38.46
p at Eagle Pass, Tex			2	37.74	21		1	24	452.83
Hamilton, N. Y			2	7.63	24		38	64	244.27
McHenry, Md			2	12.50	11		5	18	112.50
tsburg Barracks, N. Y		2	2	32.79	5		1	8	131.15
Walla Walla, Wash			2	9.80	15		13	30	147.06
d. Department of California			2	18.18				2	18.18
d. Department of the East			2	46.51				2	46.51
d. Department of the Missouri			2	37.04				2	37.04
Bayard, N. Mex			1	3.36	58		41	100	335.57
Barracks, Idaho			1	10.20	4			5	51.02
Buford, N. Dak			1	4.69	51		5	57	267.61
mbia Arsenal, Tenn			1	52.63	4		1	6	315.79
N. G. H. Hot Springs, Ark			1	30.30				1	30.30
nworth Prison, Kans			1	8.70			3	4	34.78
Meade, S. Dak			1	2.42		4	41	46	111.38
Missoula, Mont			1	5.29			4	5	26.46
port Barracks, Ky			1	16.67	3		4	8	133.33
Niagara, N. Y			1	5.32	8		5	14	74.47
Oklahoma, Okla			1	25.64	3		1	5	128.21
Randall, S. Dak			1	10.31	15			16	164.95

TABLE XIII.—*Distribution of specific febrile diseases, etc., at United States mili posts during the year 1892*—Continued.

Posts.	Specific febrile and acute infectious diseases (excluding influenza, erysipelas, and tonsillitis).				Influenza.	Erysipelas.	Tonsillitis.	Aggregate.	Ratio per 1,000 of mean
	Whooping cough.	Other infectious diseases.	Total.	Ratios per 1,000 of mean strength.					
Fort Ringgold, Tex			1	7.46	16		1	18	[illegible]
San Diego Barracks, Cal			1	14.49			1	2	[illegible]
Fort Stanton, N. Mex			1	8.93	4		2	7	[illegible]
Fort Trumbull, Conn			1	16.13	12			13	[illegible]
Fort Washakie, Wyo			1	6.45	11		8	20	[illegible]
Watervliet Arsenal, N. Y			1	18.18	5		7	13	[illegible]
Fort Wood, N. Y			1	18.52			3	4	[illegible]
Fort Yellowstone, Wyo			1	13.16			2	3	[illegible]
Field, Department of the Columbia			1	8.47				1	[illegible]
Field, Department of Dakota			1	8.40	3		4	8	[illegible]
Field, Department of the Platte			1	3.18			7	8	[illegible]
Field, Department of Texas			1	10.20				1	[illegible]
Washington Barracks, D. C			1	3.01	18	1	5	25	[illegible]
Fort Supply, Ind. T					142		6	148	[illegible]
Fort Sully, S. Dak					32	1	12	45	[illegible]
Vancouver Barracks, Wash					31		8	39	[illegible]
Willets Point, N. Y					26		7	33	[illegible]
St. Francis Barracks, Fla					21		1	22	[illegible]
Fort Barrancas, Fla					18		1	19	[illegible]
Camp Poplar River, Mont					18		3	21	[illegible]
Rock Island Arsenal, Ill					17		2	19	[illegible]
Fort Preble, Me					16		4	20	[illegible]
Fort Du Chesne, Utah					12		4	16	[illegible]
Fort Bidwell, Cal					11			11	[illegible]
Fort Mackinac, Mich					8		6	14	[illegible]
Fort Wadsworth, N. Y					8		1	9	[illegible]
Whipple Barracks, Ariz					8		4	12	[illegible]
Sandy Hook, N. J					7		2	9	[illegible]
Allegheny Arsenal, Pa					6		1	7	[illegible]
Fort Brown, Tex					5			5	[illegible]
Fort Canby, Wash					5			5	[illegible]
Indianapolis Arsenal, Ind					5		1	6	[illegible]
Augusta Arsenal, Ga					4			4	[illegible]
Kennebec Arsenal, Me					4			4	[illegible]
Watertown Arsenal, Mass					3		2	5	[illegible]
Alcatraz Island, Cal					2		3	5	[illegible]
Frankford Arsenal, Pa					2			2	[illegible]
San Antonio, Tex					2			2	[illegible]
Fort Bowie, Ariz					1	1	4	6	[illegible]
Camp Pena Colorado, Tex					1		3	4	[illegible]
Fort Townsend, Wash					1		1	2	[illegible]
Fort Brady, Mich						1	3	4	[illegible]
Fort Sidney, Nebr							33	33	[illegible]
Fort Porter, N. Y							11	11	[illegible]
Fort Ontario, N. Y							4	4	[illegible]
Fort Huachuca, Ariz							3	3	[illegible]
Fort Hancock, Tex							2	2	[illegible]
Fort Gaston, Cal							1	1	[illegible]
Fort Mason, Cal							1	1	[illegible]
Fort Pembina, N. Dak							1	1	[illegible]
Fort Spokane, Wash							1	1	[illegible]
Field, Department of Arizona							1	1	[illegible]
Total	6	5	598		17.93	28	1,014	3,433	[illegible]
Admission rates per 1,000 of mean strength	.25	.21	24.71		78.98	1.16	41.90		

ABLE XIV.—*Distribution of pneumonia at United States military posts during the year 1892.*

[Cases of pneumonia, complications of other diseases not included.]

Names of posts.	Admissions.				Dispositions.				Lobar pneumonia.					Catarrhal pneumonia.					Undefined type.	
	Total.	White.	Colored.	Indian.	Duty.	Deaths.	Otherwise.	Remaining.	Right side.	Left side.	Both sides.	Total.	Deaths from.	Right side.	Left side.	Both sides.	Total.	Deaths from.	Cases.	Deaths from.
olumbus Barracks, Ohio	10	10	...	...	6	4	...	...	5	4	1	10	4	...	...	...	...	...	...	...
efferson Barracks, Mo	5	5	...	...	5	...	...	...	2	...	...	2	...	2	...	1	3	...	...	...
hipple Barracks, Ariz	5	5	...	...	3	2	...	...	4	...	1	5	2	...	...	...	...	...	...	...
ort Assinniboine, Mont	4	4	...	...	3	1	...	...	2	1	1	4	1	...	...	...	...	...	...	...
ort Buford, N. Dak	4	...	4	...	...	...	...	4	4	...	...	4	...	...	...	...	...	...	...	...
ort Leavenworth, Kans	3	3	...	...	3	...	...	...	...	2	1	3	...	...	...	...	...	...	...	...
ort Bayard, N. Mex	2	...	2	...	1	1	...	...	...	2	...	2	1	...	...	...	...	...	...	...
ort Bliss, Tex	2	2	...	...	1	1	...	...	...	1	1	2	1	...	...	...	...	...	...	...
ort Clark, Tex	2	2	...	...	2	...	...	...	1	1	...	2	...	...	...	...	...	...	...	...
ort D. A. Russell, Wyo	2	2	...	...	1	...	...	1	1	1	...	2	...	...	...	...	...	...	...	...
avids Island, N. Y	2	2	...	...	1	...	...	1	1	1	...	2	...	...	...	...	...	...	...	...
ort Keogh, Mont	2	1	1	...	2	...	...	...	2	...	...	2	...	...	...	...	...	...	...	...
ort McHenry, Md	2	2	...	...	1	...	...	1	...	1	...	1	...	...	...	1	1	...	...	...
ort McKinney, Wyo	2	2	...	...	2	...	...	...	...	2	...	2	...	...	...	...	...	...	...	...
ort Monroe, Va	2	2	...	...	2	...	...	...	...	1	...	1	...	...	...	...	...	...	1	...
rt Niobrara, Nebr	2	...	...	2	1	...	1	...	1	1	...	2	...	...	...	...	...	...	...	...
rt Omaha, Nebr	2	1	...	1	1	1	...	...	...	...	2	2	1	...	...	...	...	...	...	...
rt Reno, Okla	2	2	...	...	1	*1	1	...	...	...	1	1	...	...	...	1	1	...	...	*1
n Diego Barracks, Cal	2	2	...	...	2	...	...	...	1	1	...	2	...	...	...	...	...	...	...	...
rt Sidney, Nebr	2	2	...	...	2	...	...	...	...	...	2	2	...	...	...	...	...	...	...	...
rt Spokane, Wash	2	2	...	...	...	...	1	1	2	...	...	2	...	...	...	...	...	...	...	...
rt Walla Walla, Wash	2	2	...	...	1	1	...	...	1	...	1	2	1	...	...	...	...	...	...	...
rt Yates, N. Dak	2	2	...	...	2	...	...	...	1	...	...	1	...	1	...	...	1	...	...	...
rt Adams, R. I	1	1	...	...	...	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...
rt Bowie, Ariz	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	1
rt Columbus, N. Y	1	1	...	...	...	...	...	1	...	1	...	1	...	...	...	...	...	...	...	...
rt Grant, Ariz	1	1	...	...	1	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...
t Logan, Colo	1	1	...	...	1	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...
t Marcy, N. Mex	1	1	...	...	1	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...
t McPherson, Ga	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...
sidio of San Francisco, al	1	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...
t Riley, Kans	1	1	...	...	1	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...
Carlos, Ariz	1	1	...	...	...	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...
t Sherman, Idaho	1	1	...	...	1	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...
t Sill, Okla	1	1	...	...	1	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...
t Snelling, Minn	1	1	...	...	...	1	...	...	1	...	...	1	1	...	...	...	...	...	...	...
couver Barracks, Wash	1	1	...	...	...	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...
t Wadsworth, N. Y	1	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	1	1	...	...
lets Point, N. Y	1	1	...	...	1	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...
d and at large	2	1	1	...	1	†2	...	...	1	...	1	2	1	...	...	...	...	...	...	*1
Total	83	72	8	3	52	*2 15	4	12	35	23	12	70	13	5	1	4	10	1	3	*2 1

* Not on sick report. † Including 1 not on sick report.

TABLE XV.—*Twenty posts giving the highest admission rates for malarial diseases, rheumatism, diarrheal and venereal diseases, respectively, during 1892.*

I.—MALARIAL DISEASES.

Names of stations.	Mean strength.	Ratios per 1,000 of mean strength.		
		Admissions.	Deaths.	Discharges for disability
Washington Barracks, D. C	332	563.25	....	....
Fort Sill, Okla	346	474.00	....	....
Fort Myer, Va	236	466.11	....	....
Mount Vernon Barracks, Ala	181	270.70	....	5.52
Fort Reno, Okla	316	265.82	....	....
Fort Hamilton, N. Y	262	221.38	....	....
Fort Clark, Tex	321	205.61	....	....
Jefferson Barracks, Mo	506	193.69	....	....
Fort Wadsworth, N. Y	175	171.42	....	....
Fort Barrancas, Fla	75	146.67	....	....
Jackson Barracks, La	106	141.50	....	....
Fort Sam Houston, Tex	427	98.36	....	....
Fort Omaha, Nebr	483	95.24	....	....
Fort Riley, Kans	686	94.75	....	....
Fort Marcy, N. Mex	123	81.30	....	....
Fort Washakie, Wyo	155	77.42	....	....
Fort Monroe, Va	375	77.33	....	....
Fort McIntosh, Tex	149	73.82	....	....
St. Francis Barracks, Fla	123	73.17	....	....
Fort Supply, Ind. T	267	71.16	....	....
The Army	24,203	63.75	....	.04

II.—RHEUMATISM.

[Muscular and articular.]

Names of stations.	Mean strength.	Admissions.	Deaths.	Discharges for disability
Fort Marcy, N. Mex	123	195.12	....	8.13
Fort Canby, Wash	106	169.81	....	9.43
Fort Robinson, Nebr	349	166.18	....	....
St. Francis Barracks, Fla	123	162.60	....	....
Fort Bowie, Ariz	136	154.41	....	....
Fort Snelling, Minn	412	143.20	....	2.43
San Carlos, Ariz	167	125.75	....	....
Fort Barrancas, Fla	75	120.00	....	....
Fort Sully, S. Dak	176	113.64	....	....
Fort Bayard, N. Mex	298	110.74	....	....
West Point, N. Y	375	109.33	....	....
Fort Custer, Mont	395	106.33	....	5.06
Fort Mackinac, Mich	114	105.27	....	....
Fort Apache, Ariz	197	101.52	....	....
Fort Monroe, Va	375	101.33	....	....
Fort McKinney, Wyo	270	96.30	....	....
Fort Du Chesne, Utah	139	93.53	....	....
Columbus Barracks, Ohio	591	93.06	....	....
Fort Schuyler, N. Y	98	91.84	....	....
Fort Reno, Okla	316	91.77	....	....
The Army	24,203	71.52	.04	1.41

III.—DIARRHEAL DISEASES.

Names of stations.	Mean strength.	Admissions.	Deaths.	Discharges for disability
Fort Monroe, Va	375	389.33	....	....
Fort Hamilton, N. Y	262	381.68	....	....
Davids Island, N. Y	555	257.66	....	....
Fort Barrancas, Fla	75	253.33	....	....
St. Francis Barracks, Fla	123	252.03	....	....
Fort Sam Houston, Tex	427	248.24	....	....
Fort Clark, Tex	321	218.08	....	....
San Carlos, Ariz	167	215.57	....	....
Fort Schuyler, N. Y	98	214.28	....	....
Fort Supply, Ind. T	267	202.25	....	....
Fort Yates, N. Dak	259	200.76	....	....
Madison Barracks, N. Y	333	180.18	....	....
Willets Point, N. Y	376	175.53	....	....
Fort Stanton, N. Mex	112	169.64	....	....

TABLE XV.—*Twenty posts giving the highest admission rates for malarial diseases, rheumatism, diarrheal, and venereal diseases, respectively, during 1892*—Continued.

III.—DIARRHEAL DISEASES.

Names of stations.	Mean strength.	Ratios per 1,000 of mean strength.			
		Admissions.	Deaths.	Discharges for disability.	Constantly noneffective.
Fort Marcy, N. Mex	123	162.60	....	....	2.53
Fort Snelling, Minn	412	160.19	....	....	.97
Fort Wingate, N. Mex	358	159.21	....	....	1.06
Fort McPherson, Ga	399	142.85	....	....	1.97
Fort Reno, Okla	316	142.40	....	....	1.32
Fort Apache, Ariz	197	142.13	....	....	1.87
The Army	24,203	110.84	....	.04	1.31

IV.—VENEREAL DISEASES.

Columbus Barracks, Ohio	591	292.72	....	1.69	18.54
Fort Ringgold, Tex	134	208.97	....	....	9.63
Jackson Barracks, La	106	198.11	....	18.87	12.16
Fort McPherson, Ga	399	195.48	....	....	13.67
Fort Porter, N. Y	105	171.42	....	....	10.27
Fort McHenry, Md	160	168.75	....	12.50	11.84
Fort McIntosh, Tex	149	167.78	....	....	15.47
Washington Barracks, D. C	332	156.61	....	9.04	9.69
San Carlos, Ariz	167	149.70	....	5.99	7.61
Fort Omaha, Nebr	483	140.79	....	2.07	7.52
Fort Bliss, Tex	107	140.19	....	....	9.64
Fort Wayne, Mich	233	137.34	....	....	11.71
Jefferson Barracks, Mo	506	136.37	....	1.98	9.49
Fort Schuyler, N. Y	98	132.66	....	....	6.03
Angel Island, Cal	276	130.44	....	7.24	8.75
Fort Marcy, N. Mex	123	130.08	....	....	5.11
Alcatraz Island, Cal	117	128.21	....	8.55	10.21
Fort Thomas, Ky	268	119.41	....	3.73	8.89
Fort Adams, R. I	248	116.93	....	....	10.97
Fort Clark, Tex	321	115.27	....	9.35	8.25
The Army	24,203	76.72	....	1.97	5.32

TABLE XVI.—*Twenty posts giving the highest noneffective rates for malarial diseases, rheumatism, diarrheal and venereal diseases, respectively, during 1892.*

I.—MALARIAL DISEASES.

Names of stations.	Mean strength.	Constantly noneffective per 1,000 of mean strength.	Average number sick daily.	Average number of days each case was treated.
Fort Clark, Tex	321	15.00	4.81	26.70
Fort Sill, Okla	346	8.87	3.07	6.85
Fort Ringgold, Tex	134	8.69	1.16	71.00
Fort Barrancas, Fla	75	8.45	.63	21.91
Fort Reno, Okla	316	8.23	2.60	11.33
Washington Barracks, D. C	332	7.32	2.43	4.75
Fort Myer, Va	236	6.46	1.52	5.16
Jefferson Barracks, Mo	506	5.16	2.61	9.76
Mount Vernon Barracks, Ala	181	4.77	.86	6.45
Jackson Barracks, La	106	3.51	.37	9.07
Fort Sam Houston, Tex	427	3.38	1.44	12.57
Fort Riley, Kans	686	3.15	2.16	12.15
Vancouver Barracks, Wash	407	3.11	1.27	27.29
Fort Apache, Ariz	197	3.06	.60	15.78
Fort Marcy, N. Mex	123	3.02	.37	13.60
Fort Omaha, Nebr	483	2.96	1.43	11.39
Fort Hamilton, N. Y	262	2.86	.75	4.72
Boise Barracks, Idaho	98	2.31	.23	20.75
Fort McIntosh, Tex	149	2.16	.32	10.73
San Carlos, Ariz	167	2.14	.36	14.56
The Army	24,203	1.76	42.65	10.12

TABLE XVI.—*Twenty posts giving the highest noneffective rates for malarial diseases, rheumatism, diarrheal and venereal diseases, respectively, during 1892*—Continued.

II.—RHEUMATISM.

Names of stations.	Mean strength.	Constantly noneffective per 1,000 of mean strength.	Average number sick daily.
Fort Canby, Wash	106	11.93	1.26
Fort Barrancas, Fla	75	9.94	.75
Fort Bowie, Ariz	136	9.76	1.33
Fort Snelling, Minn	412	9.10	3.75
Fort Bayard, N. Mex	298	8.79	2.62
Fort Yates, N. Dak	259	6.60	1.71
Fort Sully, S. Dak	176	5.45	.96
Madison Barracks, N. Y	333	5.18	1.72
Columbus Barracks, Ohio	591	4.94	2.92
Fort Apache, Ariz	197	4.52	.89
Fort Grant, Ariz	286	4.35	1.24
Fort McKinney, Wyo	270	4.16	1.12
Fort Thomas, Ky	268	4.15	1.11
Fort Sidney, Nebr	134	4.00	.54
Fort Robinson, Nebr	349	3.98	1.39
Fort Monroe, Va	375	3.93	1.48
Fort Sam Houston, Tex	427	3.83	1.63
Fort Custer, Mont	395	3.80	1.50
Fort Assinniboine, Mont	459	3.70	1.70
Fort Logan, Colo	332	3.52	1.17
The Army	24,203	3.32	80.39

III.—DIARRHEAL DISEASES.

Names of stations.	Mean strength.	Constantly noneffective per 1,000 of mean strength.	Average number sick daily.
Fort Barrancas, Fla	75	9.14	.69
San Carlos, Ariz	167	3.45	.58
Fort Hamilton, N. Y	262	3.28	.86
Fort Monroe, Va	375	3.24	1.22
Fort Sam Houston, Tex	427	2.93	1.25
Fort Yates, N. Dak	259	2.90	.75
Fort Marcy, N. Mex	123	2.53	.31
Fort Clark, Tex	321	2.25	.72
Fort McPherson, Ga	399	1.97	.79
Davids Island, N. Y	555	1.95	1.08
St. Francis Barracks, Fla	123	1.89	.23
Fort Apache, Ariz	197	1.87	.27
Fort Sill, Okla	346	1.74	.60
Fort Yellowstone, Wyo	76	1.73	.13
Fort Meade, S. Dak	413	1.71	.70
Fort Assinniboine, Mont	459	1.70	.78
Fort Supply, Ind. T	267	1.69	.45
Willets Point, N. Y	376	1.66	.62
Fort McHenry, Md	160	1.64	.26
Madison Barracks, N. Y	333	1.63	.54
The Army	24,203	1.13	43.81

IV.—VENEREAL DISEASES.

Names of stations.	Mean strength.	Constantly noneffective per 1,000 of mean strength.	Average number sick daily.
Columbus Barracks, Ohio	591	18.54	10.95
Fort McIntosh, Tex	149	15.47	2.31
Fort McPherson, Ga	399	13.67	5.46
Jackson Barracks, La	106	12.16	1.29
Fort McHenry, Md	160	11.84	1.89
Fort Wayne, Mich	233	11.71	2.73
Fort Custer, Mont	395	11.05	4.37
Fort Adams, R. I	248	10.97	2.72
Fort Porter, N. Y	105	10.27	1.08
Alcatraz Island, Cal	117	10.21	1.19
Washington Barracks, D. C	332	9.69	3.22
Fort Bliss, Tex	107	9.64	1.03
Fort Ringgold, Tex	134	9.63	1.29
Jefferson Barracks, Mo	506	9.49	4.80
Leavenworth Prison, Kans	115	9.48	1.09
Fort Thomas, Ky	268	8.89	2.38
Angel Island, Cal	276	8.75	2.42
Fort Monroe, Va	375	8.51	3.19
Fort Clark, Tex	321	8.25	2.65
Fort Bayard, N. Mex	298	7.84	2.34
The Army	24,203	5.32	128.96

TABLE XVII.—*Prevalence of alcoholism at the various posts and its influence on the effective force of the garrisons for the year 1892.*

Names of stations.	Mean strength.	Ratio per 1,000 of mean strength. Admissions.	Ratio per 1,000 of mean strength. Constantly noneffective.
Fort Brady, Mich	117	179.49	2.08
Jackson Barracks, La	106	179.23	2.99
Fort Porter, N. Y	105	171.42	1.87
Willets Point, N. Y	376	159.57	2.03
Rock Island Arsenal, Ill	65	153.85	3.28
Fort Ontario, N. Y	61	131.15	1.12
Camp Oklahoma, Okla	39	128.20	.63
Fort McPherson, Ga	399	127.82	1.61
Fort Marcy, N. Mex	123	113.82	.98
Fort Barrancas, Fla	75	106.67	.87
Fort Niobrara, Nebr	336	95.24	1.09
St Francis Barracks, Fla	123	73.17	.62
Fort Keogh, Mont	386	69.95	.79
Fort Logan, Colo	332	69.27	1.75
Fort Mason, Cal	58	68.97	.33
Fort Omaha, Nebr	483	68.33	.89
Fort Ringgold, Tex	134	67.17	.84
Plattsburg Barracks, N. Y	61	65.57	.40
Madison Barracks, N. Y	333	63.06	.65
Whipple Barracks, Ariz	192	62.50	.08
Fort Townsend, Wash	64	62.50	.60
Fort Mackinac, Mich	114	61.40	.60
Fort Warren, Mass	115	60.87	.47
Leavenworth Prison, Kans	115	60.87	.47
Washington Barracks, D. C	332	60.24	.79
Fort Bowie, Ariz	136	58.83	.38
Benicia Arsenal, Cal	53	56.60	.52
Fort Canby, Wash	106	56.60	.28
Mount Vernon Barracks, Ala	181	55.25	.39
Fort McKinney, Wyo	270	51.85	.67
Fort Sam Houston, Tex	427	51.52	.67
Fort Wadsworth, N. Y	175	51.43	.50
Fort Schuyler, N. Y	98	51.02	1.06
Fort Trumbull, Conn	62	48.39	.35
Fort Niagara, N. Y	188	47.87	.39
Fort Wayne, Mich	233	47.21	.46
Fort Douglas, Utah	485	45.36	.41
Vancouver Barracks, Wash	407	44.23	.54
Fort McHenry, Md	160	43.75	.39
Fort Hamilton, N. Y	262	41.98	.38
Camp Pena Colorado, Tex	49	40.82	.33
Fort Wingate, N. Mex	358	39.11	.64
Fort Snelling, Minn	412	38.84	.68
Fort Yates, N. Dak	259	38.61	.45
Fort Myer, Va	236	38.14	.36
Davids Island, N. Y	555	37.84	.26
Camp at Eagle Pass, Tex	53	37.74	.15
Fort Huachuca, Ariz	318	34.59	.47
Fort Walla Walla, Wash	204	34.31	.32
Fort Sheridan, Ill	527	34.15	.28
Fort Sully, S. Dak	176	34.09	.17
Fort Meade, S. Dak	413	33.90	.92
Benicia Barracks, Cal	132	30.30	.37
Fort Supply, Ind. T	267	29.96	.32
Fort Du Chesne, Utah	139	28.78	.12
Fort Robinson, Nebr	349	28.65	.23
Fort Stanton, N. Mex	112	26.79	.17
Fort Leavenworth, Kans	716	26.54	.33
Fort Yellowstone, Wyo	76	26.31	.32
Fort Assinniboine, Mont	459	26.14	.29
Alcatraz Island, Cal	117	25.64	.40
Fort Columbus, N. Y	244	24.59	.31
Angel Island, Cal	276	21.74	.25
Fort Monroe, Va	375	21.33	.22
Fort Missoula, Mont	189	21.16	.29
Camp Pilot Butte, Wyo	48	20.83	.46
Fort Randall, S. Dak	97	20.62	.08
Fort Adams, R. I	248	20.16	.22
Fort Hancock, Tex	50	20.00	.05
Fort Riley, Kans	696	18.95	.32
Fort Preble, Me	57	17.54	.67
Presidio of San Francisco, Cal	465	17.20	.15
Fort Brown, Tex	59	16.95	.09
Columbus Barracks, Ohio	591	16.92	.15
Newport Barracks, Ky	60	16.67	.18
Fort Clark, Tex	321	15.58	.13
Fort Apache, Ariz	197	15.23	.08
Fort Sidney, Nebr	134	14.93	.51
Fort D. A. Russel, Wyo	429	13.99	.22
Fort Grant, Ariz	286	13.99	.12
Fort Bayard, N. Mex	298	13.42	.10
Fort Sherman, Idaho	232	12.93	.33
Camp Poplar River, Mont	97	10.31	.08
Boise Barracks, Idaho	98	10.20	.06
Fort Reno, Okla	316	9.49	.10
Fort Custer, Mont	395	7.59	.50
Fort Thomas, Ky	268	7.46	.04
Fort Spokane, Wash	135	7.41	.02
Fort Washakie, Wyo	155	6.45	.21
Jefferson Barracks, Mo	506	3.95	.02
West Point, N. Y	375	2.67	.03
Field, Department of the Platte	314	15.92	.10
Field, Department of the Columbia	118	8.47	.05
The Army	24,203	37.23	.45

TABLE XVIII.—*The relation of certain classes of disease to the several arms of th*

[Annual rates for the period of

Orders of diseases.	Total.	Arms of service.						
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.
Total specific febrile and acute infectious diseases, including erysipelas.								
Admissions:								
Officers	162.19	179.84	182.34	256.05	67.23	25.32	134.92	
Enlisted men	142.42	138.14	163.89	159.29	198.96	204.31	109.33	98.24
Total	143.59	140.44	164.79	165.41	186.81	174.87	113.30	98.24
Noneffectiveness:								
Officers	6.49	6.50	8.25	11.96	1.96	1.00	4.27	
Enlisted men	3.47	3.48	3.69	3.50	6.10	3.49	2.60	3.49
Total	3.65	3.64	3.91	4.04	5.72	3.08	2.86	3.49
Deaths:								
Officers	.94	1.18	1.57					
Enlisted men	1.05	1.32	1.02	.97	.78		.89	
Total	1.04	1.81	1.05	.89	.69		.71	
Discharges:								
Enlisted men	.03	.03			.78			
Malarial diseases.								
Admissions:								
Officers	45.26	49.25	73.40	54.99	8.40	4.22	34.39	
Enlisted men	74.91	59.55	101.07	107.46	69.17	58.97	37.42	66.37
Total	73.11	58.98	99.74	104.06	63.57	49.97	36.95	66.37
Noneffectiveness:								
Officers	2.09	1.58	2.85	2.06	.12	.09	6.95	
Enlisted men	2.05	1.87	2.54	2.56	1.22	.91	.95	2.10
Total	2.05	1.85	2.57	2.53	1.12	.78	1.88	2.10
Deaths:								
Officers	.16		.79					
Enlisted men	.08	.15	.05					
Total	.09	.14	.10					
Discharges:								
Enlisted men	.12	.12	.05	.11			.44	.37
Typho-malarial fever.								
Admissions:								
Enlisted men	.31	.34	.23	.36			.49	.40
Total	.29	.32	.22	.33			.41	.40
Noneffectiveness:								
Enlisted men	.05	.04	.06	.06			.07	.06
Total	.05	.04	.05	.06			.06	.06
Deaths:								
Enlisted men	.04	.06	.05					
Total	.04	.06	.05					
Diarrheal diseases.								
Admissions:								
Officers	55.82	62.43	72.25	84.19	42.02	29.54	23.81	
Enlisted men	118.33	111.20	131.20	172.67	146.03	218.43	35.47	69.19
Total	114.54	108.49	128.14	166.95	136.43	187.37	33.66	69.19
Noneffectiveness:								
Officers	1.17	1.32	1.13	2.51	.39	.81	.25	
Enlisted men	1.33	1.17	1.62	1.96	2.56	1.73	.35	.75
Total	1.32	1.18	1.59	2.00	2.36	1.57	.33	.75
Deaths:								
Officers	.16	.39						
Enlisted men	.01		.05					
Total	.02	.03	.05					
Discharges:								
Enlisted men	.12	.09	.21	.11			.44	
Septic diseases (excluding erysipelas).								
Admissions:								
Officers	.23						2.65	
Enlisted men	.09	.13						
Total	.10	.13					.41	
Noneffectiveness:								
Officers	.03						.30	
Enlisted men	.001	.002						
Total	.003	.002					.05	
Deaths:								
Enlisted men	.01		.05					
Total	.01		.05					

service and ages of individuals, expressed in ratios per 1,000 of their mean strengths.

years ending December 31, 1892.]

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	163.64	189.20	172.84	179.88	150.79	182.63	142.39	93.29	95.65
161.43	170.94	141.48	122.25	122.75	128.74	107.63	97.70	106.73	265.31
161.43	170.84	143.12	124.88	128.28	130.84	119.61	116.13	97.89	146.34
....	6.53	8.64	6.41	6.50	5.34	5.58	6.56	4.77	7.97
4.80	4.49	3.29	2.71	2.60	3.03	2.96	2.55	3.80	11.84
4.80	4.51	3.48	2.90	2.98	3.25	3.38	4.20	4.44	9.13
....	....	.97	1.06	1.04	1.36	....	....	2.00	5.95
1.69	1.02	1.19	1.08	....	1.35	1.26	1.05	5.13	....
1.69	1.01	1.18	1.08	.13	1.35	1.00	.54	2.87	4.50
....	....	.05	.08	....	....	....	....	....	....
....	31.82	78.23	49.38	36.58	25.79	45.21	34.37	55.39	8.70
82.01	100.79	78.64	55.84	54.01	50.36	50.20	33.33	22.47	....
82.01	100.03	78.64	55.50	52.32	48.00	49.41	33.76	44.15	6.10
....	.52	3.05	2.79	2.69	2.37	1.49	1.15	1.55	.29
1.74	2.95	2.14	1.47	1.38	1.07	1.03	1.10	1.95	....
1.74	2.93	2.17	1.55	1.51	1.19	1.10	1.12	1.69	.20
....	....	.97	....	....	....	....	....	....	....
....	.14	.09	....	.15	....	....	....	....	....
....	.14	.13	....	.13	....	....	....	....	....
.84	.19	.09	....	....	.19	....	1.05	....	....
.92	.46	.30	.25	.16	.21	....	....	....	....
.92	.45	.29	.24	.15	.19	....	....	....	....
.09	.09	.04	.04	.03	.05	....	....	....	....
.09	.09	.04	.03	.03	.04	....	....	....	....
.84	.05	.05	....	....	....	....	....	....	....
.84	.05	.04	....	....	....	....	....	....	....
....	54.55	69.70	47.84	41.16	81.35	45.21	67.11	43.73	17.39
127.30	144.18	120.65	96.11	101.64	95.45	85.28	120.69	123.59	163.27
127.30	143.18	118.93	93.60	95.77	94.09	78.87	98.58	71.02	60.98
....	.49	2.87	.57	.35	1.24	.47	.77	2.72	.76
.95	1.45	1.19	1.26	1.42	1.28	1.29	2.39	3.00	8.16
.95	1.44	1.25	1.23	1.32	1.28	1.16	1.72	2.82	2.97
....	....	....	....	....	....	....	....	2.00	....
....	....	.05	....	....	....	....	....	....	....
....	....	.04	....	....	....	....	....	1.44	....
....	.14	.05	.08	.60	....	....	....	....	....
....	....	....	....	....	....	....	....	2.92	....
....	.05	.15	....	.16	.21	....	....	....	....
....	.05	.15	....	.15	.19	....	....	1.92	....
....	....	....	....	....	....	....	....	.33	....
....	.001	.002	....	.004	.003	....	....	....	....
....	.001	.002	....	.004	.003	....	....	.22	....
....	....	....	....	....	.19	....	....	....	....
....	....	....	....	....	17	....	....	....	....

TABLE XVIII.—*The relation of certain classes of disease*

Orders of diseases.	Total.	Arms of service.						
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.
Venereal diseases.								
Admissions:								
Officers	5.05	5.15	8.03	8.59	....	....	2.65	....
Enlisted men	79.34	72.93	74.67	112.42	16.22	60.63	16.04	153.72
Total	74.83	69.17	71.44	105.73	14.73	50.66	13.96	153.72
Noneffectiveness:								
Officers	.50	.25	1.19	.15	....	....	1.59	....
Enlisted men	5.36	4.91	5.13	7.93	1.07	4.92	.86	9.23
Total	5.07	4.66	4.94	7.43	.97	4.11	.98	9.23
Deaths:								
Officers	.16	....	....	....	....	....	1.81	....
Total	.01	....	....	....	....	....	.36	....
Discharges:								
Enlisted men	2.31	1.93	1.71	3.03	....	1.52	1.78	7.36
Zoögenous diseases.								
Admissions:								
Officers	1.61	2.29	1.15	1.72	....	....	2.65	....
Enlisted men	51.27	34.02	25.42	41.54	5.98	67.28	5.34	311.27
Total	48.25	32.26	24.24	38.97	5.43	56.21	4.93	311.27
Noneffectiveness:								
Officers	.02	.04	.01	.01	....	....	.07	....
Enlisted men	1.59	.99	.56	1.63	.07	1.45	.09	10.50
Total	1.51	.94	.53	1.53	.06	1.21	.09	10.50
Deaths:								
Enlisted men	.01	....	....	.11	....	....	....	....
Total	.01	....	....	.10	....	....	....	....
Discharges:								
Enlisted men	.03	.03	....	.11	....	....	....	....
Dietic diseases.								
Admissions:								
Officers	7.12	8.02	18.35	1.72	....	....	....	....
Enlisted men	42.13	54.33	22.61	56.33	36.72	147.01	21.87	5.85
Total	40.01	51.76	22.40	52.81	33.33	122.83	18.47	5.85
Noneffectiveness:								
Officers	.12	.15	.27	.03	....	....	....	....
Enlisted men	.51	.63	.30	.70	.50	1.84	.24	.07
Total	.48	.60	.30	.65	.46	1.54	.21	.07
Deaths:								
Officers	.16	....	.79	....	....	....	....	....
Enlisted men	.18	.28	.11	.22	....	....	....	....
Total	.17	.26	.15	.20	....	....	....	....
Discharges:								
Enlisted men	.19	.21	.21	.22	....	....	.44	....
Constitutional diseases (including muscular rheumatism).								
Admissions:								
Officers	78.79	106.53	72.25	106.52	25.21	4.22	37.04	....
Enlisted men	81.20	80.70	96.88	82.49	121.26	124.58	57.84	41.56
Total	81.05	82.12	95.68	84.03	112.40	104.79	54.19	41.56
Noneffectiveness:								
Officers	7.31	10.41	8.26	6.65	2.23	.02	1.40	....
Enlisted men	3.95	4.05	4.57	4.17	4.36	3.55	3.28	2.32
Total	4.15	4.40	4.75	4.33	4.16	2.97	2.99	2.32
Deaths:								
Officers	.31	....	....	1.18	....	....	....	....
Enlisted men	.18	.15	.11	.22	.78	....	.44	....
Total	.19	.14	.10	.30	.69	....	.36	....
Discharges:								
Enlisted men	2.08	2.11	2.30	2.60	3.90	1.52	1.78	.92
Developmental diseases.								
Admissions:								
Officers	.46	.57	....	1.72	....	....	....	....
Enlisted men	.52	.54	.47	1.07	....	....	....	.40
Total	.52	.54	.44	1.11	....	....	....	.40
Noneffectiveness:								
Officers	.44	.36	....	2.22	....	....	....	....
Enlisted men	.05	.04	.04	.14	....	....	....	.04
Total	.07	.06	.04	.27	....	....	....	.04
Discharges:								
Enlisted men	.80	.86	.53	1.84	....	....	....	....

ueral arms of the service and ages of individuals, etc.—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	36.36	9.96	7.72	1.52	....	....	1.64	....	....
121.77	135.77	87.28	47.38	25.04	13.27	8.25	3.45	....	....
121.77	134.67	84.65	45.32	22.76	12.00	6.93	2.70	....	....
....	3.66	.81	.20	.92	....	....	.09	....	....
6.93	8.72	5.95	3.53	2.24	1.19	.83	.16	....	....
6.93	8.66	5.78	3.36	2.12	1.08	.69	.13	....	....
....	....	....	....	1.04	....	....	....	....	....
....	....	....	....	.13	....	....	....	....	....
20.25	3.58	2.20	.77	1.20	.39	.31	....	....	....
....	4.55	7.11	1.54	....	....	....	....	....	....
166.04	111.36	39.05	16.50	10.15	5.48	4.13	9.20	5.62	20.41
166.04	110.18	37.96	15.72	9.16	4.95	3.47	5.40	1.92	6.10
....	.12	.08	.03	....	....	....	....	....	....
4.07	3.53	1.22	.45	.38	.13	.12	.15	.22	.56
4.07	3.48	1.18	.43	.34	.12	.11	.09	.07	.17
....	....	.05	....	....	....	....	....	....	....
....	....	.04	....	....	....	....	....	....	....
....	.05	.05	....	....	....	....	....	....	....
....	4.55	2.84	7.72	19.82	7.94	9.04	....	2.92	....
2.77	10.93	25.45	46.95	76.60	121.78	114.16	162.05	168.53	183.67
2.77	10.86	24.68	44.91	71.09	110.85	97.37	95.21	59.50	54.88
....	.05	.01	.09	.34	.27	.11	....	.04	....
.05	.13	.26	.49	.82	1.65	1.81	2.26	2.40	3.80
.05	.13	.25	.47	.77	1.52	1.54	1.33	.85	1.14
....	....	....	....	....	....	1.24	....	....	....
....	....	.09	.08	....	.58	1.26	2.10	5.13	....
....	....	.09	.07	....	.51	1.25	1.09	1.44	....
....	.28	.14	.15	.15	.19	.31	....	....	....
....	50.00	35.56	66.35	36.59	107.14	110.30	129.30	102.03	95.65
44.28	69.52	69.66	73.86	99.02	119.47	131.35	201.15	320.22	142.85
44.28	69.30	68.51	73.47	92.96	118.29	128.00	171.51	176.58	109.75
....	4.80	3.60	3.58	2.74	10.00	10.37	14.34	9.23	12.19
2.35	3.16	3.37	3.72	4.53	6.29	6.61	10.84	18.96	5.42
2.35	3.18	3.38	3.71	4.36	6.65	7.21	12.28	12.56	10.16
....	....	....	....	....	....	....	1.12	....	5.95
....	.05	.05	.08	.45	.77	.63	1.05	....	....
....	.05	.04	.07	.39	.68	.50	1.09	....	4.50
.84	1.30	1.70	2.09	1.80	3.85	4.40	8.41	25.64	18.52
....	....	....	....	....	....	....	....	2.92	8.70
3.69	.61	.40	....	....	.42	.69	4.60	11.24	20.41
3.69	.60	.39	....	....	.38	.58	2.70	5.76	12.20
....	....	....	....	....	....	....	.54	2.79	5.43
.46	.03	.03	....	....	.04	.02	.56	2.29	10.22
.46	.03	03	....	....	.04	.02	.55	2.62	6.86
4.22	.84	.32	.23	....	.96	1.89	11.57	20.51	....

TABLE XVIII.—*The relation of certain classes of disease to th*

Orders of diseases.	Total.	Arms of service.							
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.	All oth
Parasitic diseases.									
Admissions:									
Officers	1.15	2.29	....	1.72	....	....	....	....	
Enlisted men	3.06	1.98	3.45	3.55	1.71	2.49	.97	10.09	
Total	2.94	1.99	3.28	3.43	1.55	2.08	.82	10.09	
Noneffectiveness:									
Officers	.05	.12	....	.01	....	....	....	....	
Enlisted men	.08	.06	.08	.08	.02	.07	.01	.25	
Total	.08	.06	.08	.08	.01	.06	.01	.25	
Diseases of the nervous system.									
Admissions:									
Officers	64.56	86.49	57.24	60.14	33.61	4.22	87.30	....	
Enlisted men	54.22	51.34	60.18	68.76	58.92	72.26	31.10	46.20	
Total	54.83	53.28	60.04	68.20	56.59	61.07	39.82	46.20	
Noneffectiveness:									
Officers	6.00	7.24	4.65	4.97	.71	.15	14.39	....	
Enlisted men	1.52	1.68	1.44	1.67	1.39	1.52	1.27	1.36	
Total	1.79	1.92	1.60	1.89	1.32	1.29	3.31	1.36	
Deaths:									
Officers	2.52	3.92	....	2.35	11.56	2.89	1.81	....	
Enlisted men	.41	.40	.27	.43	1.56	.76	.44	.18	
Total	.57	.65	.25	.59	2.75	1.20	.71	.18	
Discharges:									
Enlisted men	2.86	3.13	2.57	3.25	3.12	2.28	4.00	1.66	
Diseases of the eye.									
Admissions:									
Officers	15.85	18.33	18.35	15.46	16.81	4.22	13.23	....	
Enlisted men	20.16	19.94	28.92	17.04	17.93	37.37	3.89	7.67	
Total	19.90	19.85	28.41	16.94	17.83	31.92	5.34	7.67	
Noneffectiveness:									
Officers	1.89	1.34	1.05	3.41	6.90	.43	1.93	....	
Enlisted men	.67	.76	.76	.57	.43	1.16	.32	.27	
Total	.75	.79	.77	.75	1.03	1.04	.57	.27	
Discharges:									
Enlisted men	1.21	1.52	1.23	.76	.78	....	.89	.18	
Diseases of the ear.									
Admissions:									
Officers	3.68	3.44	2.29	8.50	8.40	....	5.29	....	
Enlisted men	8.42	8.91	8.18	9.70	7.69	9.97	6.80	7.87	
Total	8.13	8.61	7.89	9.63	7.75	8.33	6.57	7.87	
Noneffectiveness:									
Officers	.17	.11	.01	.32	2.81	....	.03	....	
Enlisted men	.37	.47	.26	.25	.32	.50	.32	.47	
Total	.35	.45	.25	.25	.55	.42	.28	.47	
Discharges:									
Enlisted men	.60	.83	.53	.43	....	....	.89	.18	
Diseases of the nose.									
Admissions:									
Officers	3.45	5.15	5.73	1.72	....	....	....	....	
Enlisted men	1.94	2.31	1.64	1.78	1.71	9.14	.97	.40	
Total	2.04	2.47	1.83	1.77	1.55	7.63	.82	.40	
Noneffectiveness:									
Officers	.74	.66	2.36	.02	....	....	....	....	
Enlisted men	.10	.12	.09	.06	.12	.50	.03	.01	
Total	.14	.15	.20	.06	.11	.42	.02	.01	
Discharges:									
Enlisted men	.18	.18	.21	.22	....	....	....	....	
Diseases of the respiratory system.									
Admissions:									
Officers	130.03	158.07	149.08	199.30	67.23	12.66	50.27	....	
Enlisted men	124.17	117.24	134.27	156.09	198.97	171.92	38.87	121.24	
Total	124.53	119.48	134.98	158.87	186.81	145.72	40.64	121.24	

several arms of the service and ages of individuals, etc.—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	....	1.42	....	1.52	5.95	....	....	....	....
5.53	4.48	3.26	2.28	1.47	1.26	1.72	....	....	....
5.53	4.43	3.20	2.17	1.48	1.71	1.44	....	....	....
....	....	.01	....	.18	.17	....	....	....	....
.19	.14	.06	.06	.05	.01	.05	....	....	....
.19	.13	.06	.06	.06	.03	.05	....	....	....
....	40.91	52.63	81.79	60.97	79.36	56.06	76.92	40.82	86.96
51.66	61.03	53.45	46.87	52.37	50.57	48.14	67.82	78.65	81.64
51.66	60.80	53.43	48.68	53.21	53.33	49.41	71.57	53.74	85.37
....	2.80	2.24	6.48	4.62	8.62	7.35	7.36	9.52	4.52
.83	1.13	1.45	1.67	1.94	1.78	2.59	2.11	4.60	4.08
.83	1.15	1.47	1.92	2.20	2.43	8.35	4.28	7.84	4.39
....	....	....	....	2.09	1.36	3.72	6.73	7.98	....
....	.19	.23	.54	.30	.96	1.26	2.10	....	18.52
....	.18	.22	.50	.52	1.01	1.76	4.34	5.75	4.50
1.69	2.88	2.75	2.79	2.84	3.47	2.83	4.21	5.13	....
....	36.36	19.91	23.15	16.77	17.86	5.42	6.55	11.66	8.70
12.91	23.09	21.68	17.94	16.04	14.96	15.82	24.14	33.71	81.63
12.91	23.23	21.62	18.21	16.11	15.24	14.16	16.88	19.19	30.49
....	1.53	1.20	3.77	1.77	1.57	.26	1.60	3.27	3.62
.20	.60	.69	.72	.46	.49	1.14	1.99	2.00	6.03
.20	.61	.71	.88	.59	.59	1.00	1.83	2.84	4.34
....	.79	1.24	1.39	.90	1.16	2.52	6.31	5.13	....
....	....	2.84	6.17	6.10	1.98	3.62	3.27	2.92	....
10.15	11.19	8.03	6.35	7.53	6.74	5.16	4.60	16.85	20 41
10.15	11.06	7.85	6.34	7.39	6.29	4.91	4.05	7.68	6.10
....	....	.07	.30	.66	.01	.02	.04	.05	....
.33	.53	.31	.30	.38	.23	.15	.05	.60	2.74
.33	.53	.30	.30	.40	.21	.13	.05	.24	.82
....	.60	.50	.70	.75	.58	.31	....	5.13	18.52
....	....	4.27	3.09	3.05	7.94	3.62	....	2.92	8.70
3.69	2.49	2.01	1.69	.49	2.11	.34	3.45	5.62	....
3.69	2.46	2.08	1.76	.74	2.67	.87	2.03	3.84	6.10
....	....	.44	2.33	.09	1.44	.50	....	.47	1.62
.04	.13	.10	.08	.004	.14	.07	.19	.02	....
.04	.13	.11	.20	.01	.26	.14	.11	.32	1.13
....	.28	.09	.31	....	.19	....	....	....	....
....	122.72	100.99	108.03	112.81	142.85	179.03	165.29	119.53	95.65
146.67	140.61	118.29	114.37	112.27	116.31	114.52	137.93	191.01	122.44
146.67	140.40	117.72	114.04	112.33	118.85	124.82	149.22	143.95	103.66

TABLE XVIII.—*The relation of certain classes of disease to*

Orders of diseases.	Total.	Arms of service.						
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.
Diseases of the respiratory system—Cot'd.								
Noneffectiveness:								
Officers	5.47	5.00	8.26	5.54	6.67	.27	5.97	....
Enlisted men	3.31	3.24	3.49	3.99	5.49	4.92	1.01	2.96
Total	3.44	3.33	3.72	4.09	5.60	4.15	1.78	2.96
Deaths:								
Officers	1.42	1.96	3.14	....	....	....	....	....
Enlisted men	1.41	1.38	1.34	.87	2.34	....	2.22	2.03
Total	1.41	1.42	1.45	.79	2.06	....	1.78	2.03
Discharges:								
Enlisted men	2.36	2.42	2.51	3.03	2.34	3.79	1.78	.92
Diseases of the circulatory system.								
Admissions:								
Officers	5.97	8.59	6.88	5.15	....	....	....	....
Enlisted men	6.81	7.64	6.25	8.05	8.54	10.80	3.40	2.82
Total	6.76	7.69	6.28	7.86	7.75	9.02	2.87	2.82
Noneffectiveness:								
Officers	1.91	2.72	3.20	1.00	....	....	.38	....
Enlisted men	.57	.66	.48	.66	.78	1.73	.18	.19
Total	.65	.77	.62	.68	.71	1.45	.21	.19
Deaths:								
Officers	.94	.78	....	1.18	....	....	1.81	....
Enlisted men	.41	.43	.37	.22	.78	.76	....	.18
Total	.45	.45	.35	.30	.69	.60	.36	.18
Discharges:								
Enlisted men	1.78	2.02	1.28	3.03	3.12	1.52	.44	.55
Diseases of the digestive system.								
Admissions:								
Officers	142.89	173.53	169.73	183.84	67.23	29.54	84.66	....
Enlisted men	173.94	168.31	204.63	186.03	175.91	253.31	71.92	158.37
Total	172.06	168.59	202.94	186.22	165.87	216.51	73.89	158.37
Noneffectiveness:								
Officers	7.20	7.76	10.06	4.46	.48	.50	10.51	....
Enlisted men	2.98	2.86	3.45	3.38	2.72	3.79	1.54	2.80
Total	3.24	3.14	3.77	3.45	2.60	3.25	2.93	2.80
Deaths:								
Officers	1.89	1.96	....	1.18	5.78	2.89	1.81	....
Enlisted men	.33	.31	.32	....	2.34	.76	....	.18
Total	.45	.43	.30	.10	2.75	1.20	.36	.18
Discharges:								
Enlisted men	1.64	1.56	1.66	2.49	....	1.52	1.78	1.48
Diseases of the lymphatic system.								
Admissions:								
Officers	.92	1.72	....	1.72	....	....	....	....
Enlisted men	5.79	5.06	7.30	7.81	1.71	1.66	2.43	6.86
Total	5.49	4.88	6.95	7.42	1.55	1.39	2.05	6.86
Noneffectiveness:								
Officers	.03	.03	....	.12	....	....	....	....
Enlisted men	.50	.41	.62	.67	.55	.20	.10	.62
Total	.47	.39	.59	.63	.50	.17	.08	.62
Deaths:								
Enlisted men	.01	.03	....	....	....	....	....	....
Total	.01	.03	....	....	....	....	....	....
Discharges:								
Enlisted men	.10	.09	.11	.22	....	....	....	....
Diseases of the genito-urinary system.								
Admissions:								
Officers	16.54	17.75	26.38	25.77	8.40	....	2.65	....
Enlisted men	15.85	15.38	17.53	17.51	18.79	14.95	10.69	17.15
Total	15.90	15.51	17.96	18.05	17.83	12.49	9.44	17.15
Noneffectiveness:								
Officers	2.09	1.31	5.23	3.45	.58	....	.09	....
Enlisted men	.94	.94	1.19	.97	.60	.80	.34	.89
Total	1.01	.96	1.38	1.14	.60	.66	.30	.89

several arms of the service and ages of individuals, etc.—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	1.65	3.90	2.94	2.72	7.47	7.33	12.16	3.46	5.17
3.50	3.21	3.12	3.14	3.93	3.86	3.41	3.10	7.75	5.53
3.50	3.19	3.14	3.13	3.82	4.20	4.04	6.83	4.93	5.27
....	....	....	1.06	....	5.44	1.24	1.12	3.99	....
.84	1.07	1.15	1.24	1.50	2.50	3.14	3.15	10.26	18.52
.84	1.05	1.10	1.23	1.31	2.87	2.76	2.17	5.75	4.50
2.53	2.19	2.48	2.24	3.14	2.70	.94	2.10	5.13	....
....	....	....	3.09	4.57	3.97	9.04	13.09	11.66	17.39
3.69	6.97	6.17	5.16	5.07	10.53	12.72	16.09	11.24	....
3.69	6.89	5.96	5.05	5.03	9.90	12.13	14.85	11.52	12.20
....	....	....	.05	.95	1.14	2.65	5.94	4.77	3.00
.22	.53	.45	.46	.33	1.00	1.77	1.39	1.69	....
.22	.53	.43	.44	.39	1.01	1.91	3.27	3.72	2.10
....	....	....	....	....	....	1.24	3.37	2.00	5.95
....	....	.09	.23	.75	1.73	2.83	2.10	....	....
....	....	.09	.22	.65	1.52	2.51	2.71	1.44	4.50
....	1.77	1.33	1.47	1.35	3.28	3.14	7.36	10.26	....
....	100.00	156.47	152.77	131.10	123.01	159.12	155.48	128.28	139.13
257.39	226.05	172.75	141.79	130.61	129.58	114.16	119.53	134.83	20.41
257.39	224.65	172.21	142.35	130.65	128.95	121.35	134.87	130.52	103.65
....	2.58	4.21	8.34	4.68	9.28	8.85	9.80	5.00	18.11
3.56	3.47	2.64	2.62	2.92	3.09	3.06	3.70	2.63	.17
3.56	3.46	2.69	2.92	3.09	3.68	3.99	6.22	4.19	12.75
....	....	.97	....	....	....	2.48	3.37	3.99	23.81
.84	.09	.28	.31	.45	.58	.31	3.15	....	18.52
.84	.09	.31	.29	.39	.51	.75	3.26	2.87	22.52
.84	1.49	1.47	1.98	1.65	2.12	1.57	3.15	5.13	....
....	....	....	6.17	....	....	....	....	....	....
7.38	7.58	6.78	5.16	2.78	3.37	.69	2.30	....	....
7.38	7.49	6.54	5.21	2.51	3.05	.59	1.35	....	....
....	....	....	.19	....	....	....	....	....	....
.59	.69	.57	.42	.19	.34	.09	.07	....	....
.59	.68	.55	.41	.17	.30	.08	.04	....	....
....	.05	....	....	....	....	....	....	....	....
....	.05	....	....	....	....	....	....	....	....
....	.09	.09	.15	....	.19	....	....	....	....
....	13.63	17.07	20.06	13.72	7.94	12.66	24.55	14.58	34.78
19.37	20.60	15.71	13.28	12.60	8.64	10.66	18.39	33.71	20.41
19.37	20.52	15.76	13.63	12.71	8.57	10.98	20.93	21.11	30.49
....	1.39	2.36	2.17	3.20	.53	1.34	2.24	1.31	6.88
1.89	1.11	1.03	.66	.87	.65	.56	1.20	2.01	3.41
1.89	1.11	1.07	.73	1.09	.64	.68	1.63	1.55	5.84

TABLE XVIII.—*The relation of certain classes of disease*

Orders of diseases.	Total.	Arms of service.						
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.
Diseases of the genito-urinary system—Con.								
Deaths:								
Officers	1.26	.78	3.14	1.18	5.78	....	....	....
Enlisted men	.26	.31	.16	....	.78	....	.44	.18
Total	.34	.34	.35	.10	1.37	....	.36	.18
Discharges:								
Enlisted men	.92	.80	1.28	1.19	.78	....	....	1.11
Diseases of the locomotor system, excluding muscular rheumatism.								
Admissions:								
Officers	3.68	4.01	3.44	3.44	....	4.22	7.94	....
Enlisted men	4.83	4.79	6.43	4.97	4.27	1.66	2.92	2.62
Total	4.76	4.75	6.28	4.87	3.88	2.08	3.69	2.62
Noneffectiveness:								
Officers	.50	.50	.32	.38	....	3.03	.30	....
Enlisted men	.45	.42	.69	.33	1.42	.02	.17	.13
Total	.45	.43	.68	.33	1.29	.52	.19	.13
Deaths:								
Enlisted men	.01	.03	....	....	....	....	....	....
Total	.01	.03	....	....	....	....	....	....
Discharges:								
Enlisted men	.98	.86	1.76	.97	....	....	....	.37
Diseases of the integumentary system.								
Admissions:								
Officers	29.18	36.08	36.70	36.08	....	12.66	15.87	....
Enlisted men	82.19	73.53	105.35	103.67	53.80	88.04	17.98	81.10
Total	78.97	71.46	102.02	99.31	48.84	75.65	17.65	81.10
Noneffectiveness:								
Officers	1.33	1.49	2.29	.83	....	.91	1.14	....
Enlisted men	2.17	2.16	2.54	2.57	1.24	2.18	.59	2.06
Total	2.12	2.12	2.53	2.45	1.13	1.98	.68	2.06
Deaths:								
Officers	.16	....	.79	....	....	....	....	....
Total	.01	....	.05	....	....	....	....	....
Discharges:								
Enlisted men	.23	.25	.27	.22	....	.76	....	.18
Unclassified.								
Admissions:								
Officers	12.40	23.48	5.73	10.31	....	....	5.29	....
Enlisted men	18.80	20.27	19.17	15.74	7.69	12.46	13.60	27.03
Total	18.41	20.45	18.51	15.39	6.98	10.41	12.31	27.03
Noneffectiveness:								
Officers	.50	1.05	.24	.18	....	....	.05	....
Enlisted men	.41	.45	.34	.38	.13	.31	.48	.72
Total	.42	.48	.34	.36	.12	.26	.41	.72
Deaths:								
Enlisted men	.03	.03	.05	....	....	....	....	....
Total	.02	.03	.05	....	....	....	....	....
Discharges:								
Enlisted men	.07	.06	....	.32	....	....	....	....
Total for diseases.								
Admissions:								
Officers	786.82	953.03	909.40	1,068.73	344.52	130.81	510.60	....
Enlisted men	1,110.73	1,048.56	1,219.59	1,334.67	1,152.00	1,567.28	489.79	1,236.02
Total	1,091.07	1,043.28	1,204.54	1,317.54	1,077.52	1,331.02	493.02	1,236.02
Noneffectiveness:								
Officers	46.04	49.91	59.62	50.32	22.84	7.21	49.61	....
Enlisted men	32.42	31.32	33.94	38.22	31.10	35.60	14.80	41.25
Total	33.25	32.35	35.19	39.00	30.33	30.93	20.20	41.25
Deaths:								
Officers	10.08	10.99	10.22	7.06	23.12	5.78	7.26	....
Enlisted men	4.43	4.87	3.95	3.03	9.36	2.28	4.44	2.77
Total	4.87	5.32	4.35	3.37	11.00	3.00	4.99	2.77
Discharges:								
Enlisted men	18.60	19.12	18.44	24.13	14.82	12.90	14.66	15.31

several arms of the service and ages of individuals, etc.—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	....	....	1.06	1.04	....	1.24	3.37	3.99	....
....	.14	.23	.15	.45	.39	.63	....	10.26	....
....	.14	.22	.22	.52	.34	.75	1.63	5.75	....
3.38	1.53	.92	.39	.30	.39	.31	....	....	18.52
....	4.55	8.53	3.09	4.57	....	3.62	1.64	2.92	....
1.84	5.64	4.72	5.16	2.95	4.42	3.78	8.05	....	....
1.84	5.63	4.86	5.05	3.10	4.00	3.76	5.40	1.92	....
....	3.26	1.34	.15	.22	....	.40	.03	.09	....
.03	.49	.54	.50	.23	.23	.25	.54	....	....
.03	.52	.57	.48	.23	.21	.27	.33	.06	....
....	....	.05	....	....	....	....	....	....	....
....	....	.04	....	....	....	....	....	....	....
....	1.12	1.19	.93	.45	.58	.63	2.10	....	....
....	54.55	32.72	35.49	19.82	33.73	87.97	14.73	23.32	8.70
127.30	115.34	82.36	57.87	56.47	56.89	46.42	48.28	50.56	81.63
127.30	114.65	80.67	56.70	52.91	54.67	45.07	34.44	32.63	30.49
....	.61	1.24	2.27	.33	2.22	2.52	.34	.99	.19
2.66	2.80	1.94	1.72	2.18	1.78	1.56	3.03	1.09	1.40
2.66	2.78	1.91	1.74	2.04	1.83	1.72	1.92	1.02	.55
....	....	....	1.06	....	....	....	....	....	....
....	....	....	.07	....	....	....	....	....	....
....	.28	.18	.23	.45	....	.31	....	....	....
....	27.27	17.07	9.26	9.15	21.82	10.85	6.55	8.75	....
24.91	28.02	17.11	14.64	13.09	10.96	11.03	6.90	16.85	20.41
24.91	28.01	17.11	14.36	12.71	12.00	10.98	6.75	11.52	6.10
....	1.41	.82	.11	.60	1.12	.28	.10	.10	....
.45	.64	.35	.31	.25	.29	.24	.21	.20	2.63
.45	.65	.37	.30	.29	.37	.24	.17	.14	.78
....	....	.09	....	....	....	....	....	....	....
....	....	.09	....	....	....	....	....	....	....
....	.05	.09	....	....	....	.31	....	....	18.52
....	745.45	806.54	805.56	699.69	819.44	873.42	842.88	670.55	626.09
1,382.84	1,397.68	1,075.44	891.71	903.27	951.75	886.86	1,089.66	1,331.46	1,244.90
1,382.84	1,390.49	1,066.27	889.23	883.53	939.05	884.71	987.85	896.35	810.97
....	31.40	36.92	42.77	33.54	52.79	49.51	63.05	50.47	69.74
35.93	40.03	30.72	26.36	27.19	28.61	29.61	37.58	55.21	65.97
35.93	39.94	30.93	27.21	27.80	30.93	32.79	48.09	52.09	68.61
....	....	2.92	4.23	5.22	8.16	11.15	19.08	25.95	41.67
4.22	2.79	3.67	3.71	4.04	9.06	11.32	14.72	30.77	55.56
4.22	2.75	3.64	3.75	4.19	8.95	11.29	16.83	27.30	45.05
34.60	19.44	16.94	15.93	15.57	20.23	19.81	46.27	82.05	74.07

TABLE XVIII.—*The relation of certain classes of dis*

Orders of diseases.	Total.	Arms of service.						
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits
Total for injuries.								
Admissions:								
Officers	68.47	80.76	104.36	56.70	25.21	33.76	37.04	....
Enlisted men	260.08	234.34	369.34	290.77	193.00	351.31	43.25	174.29
Total	248.43	225.83	356.49	275.68	177.52	299.09	42.28	174.29
Noneffectiveness:								
Officers	5.56	7.16	7.61	5.18	.71	1.44	3.76	....
Enlisted men	8.36	7.40	12.77	8.78	5.51	8.71	1.27	4.78
Total	8.19	7.38	12.52	8.55	5.07	7.51	1.66	4.78
Deaths:								
Officers	1.42	1.96	1.57	1.18	....	....	1.81	....
Enlisted men	2.97	2.42	4.97	2.71	4.68	1.52	1.78	.92
Total	2.85	2.39	4.75	2.58	4.12	1.20	1.78	.92
Discharges:								
Enlisted men	2.62	2.39	3.79	2.81	.78	.76	.44	2.21
Total diseases and injuries.								
Admissions:								
Officers	855.29	1,033.79	1,013.76	1,125.43	369.73	164.55	547.62	....
Enlisted men	1,370.81	1,282.90	1,588.93	1,625.44	1,345.00	1,918.60	533.04	1,410.33
Total	1,339.51	1,269.10	1,561.05	1,593.22	1,255.04	1,630.12	535.30	1,410.33
Noneffectiveness:								
Officers	51.60	57.07	67.23	55.50	23.55	8.65	53.37	....
Enlisted men	40.77	38.72	46.71	47.00	36.61	44.30	16.07	46.04
Total	41.43	39.74	47.70	47.55	35.40	38.44	21.86	46.04
Deaths:								
Officers	11.49	12.95	11.79	8.24	23.12	5.78	9.07	....
Enlisted men	7.40	7.29	8.92	5.74	14.04	3.79	6.22	3.69
Total	7.72	7.70	9.11	5.94	15.12	4.21	6.78	3.69
Discharges:								
Enlisted men	21.22	21.51	22.23	26.95	15.60	13.66	15.10	17.52

several arms of the service and ages of individuals, etc.—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	72.73	83.92	72.54	57.92	73.41	65.10	65.47	61.22	34.78
280.43	306.92	288.29	220.89	206.56	187.10	160.25	190.80	179.77	183.68
280.43	304.31	281.33	213.19	192.13	176.18	145.04	139.08	101.73	79.27
....	5.19	5.66	6.02	5.06	7.05	6.61	4.39	5.48	.76
7.22	8.98	9.23	7.12	7.26	7.33	7.73	8.11	6.84	10.95
7.22	8.94	9.10	7.06	7.05	7.30	7.55	6.58	5.95	3.81
....	....	4.87	1.06	1.04	2.72	....	....	....	....
2.53	2.42	3.12	3.87	3.14	2.50	2.83	2.10	5.13	....
2.53	2.38	3.20	3.68	2.88	2.53	2.26	1.09	1.44	....
2.53	3.58	2.71	1.93	1.80	1.73	2.20	1.05	....	....
....	818.18	890.47	878.09	757.62	892.85	938.52	908.35	731.78	660.87
1,663.28	1,704.59	1,363.73	1,112.60	1,109.82	1,138.85	1,047.11	1,280.46	1,511.24	1,428.57
1,663.28	1,694.78	1,347.60	1,100.42	1,075.67	1,115.24	1,029.76	1,126.94	998.08	890.24
....	36.59	42.58	48.79	38.60	59.85	56.13	67.44	55.96	70.50
43.16	49.01	39.95	33.48	34.45	35.94	37.34	45.70	62.05	76.92
43.16	48.87	40.03	34.27	34.85	38.23	40.34	54.67	58.04	72.42
....	....	7.80	5.29	6.26	10.88	11.15	19.08	23.95	41.67
6.75	5.21	6.79	7.58	7.18	11.56	14.15	16.82	35.90	55.56
6.75	5.13	6.84	7.43	7.07	11.48	13.54	17.92	28.74	45.05
37.13	23.02	19.64	17.87	17.36	21.97	22.01	47.32	82.05	74.07

TABLE XIX.—*The relation of certain classes of disease to nativiti*

[Annual rates for the period of

Orders of diseases.	Total.	Nativities.				
		American U.S.	Irish.	German.	English.	Can
Totla specific febrile and acute infectious diseases, including erysipelas.						
Admissions:						
Officers	162.19	161.25	88.89	282.0[illegible]	193.54	[illegible]
Enlisted men	142.42	152.20	136.40	120.63	135.41	[illegible]
Total	143.59	153.03	135.91	121.42	136.10	[illegible]
Noneffectiveness:						
Officers	6.49	6.56	4.26	5.47	5.66	[illegible]
Enlisted men	3.47	3.61	3.50	3.01	3.49	[illegible]
Total	3.65	3.88	3.51	3.02	3.51	[illegible]
Deaths:						
Officers	.94	1.00	....	....	....	....
Enlisted men	1.05	1.02	2.01	.79	.71	....
Total	1.04	1.02	1.98	.78	.70	....
Discharges:						
Enlisted men	.03	.04	....	....	....	....
Malarial diseases.						
Admissions:						
Officers	45.26	43.10	66.67	76.93	....	....
Enlisted men	74.91	77.27	74.16	72.29	73.15	[illegible]
Total	73.11	74.17	74.08	72.31	72.28	[illegible]
Noneffectiveness:						
Officers	2.09	2.14	.82	1.40	....	....
Enlisted men	2.05	2.09	1.83	2.04	2.03	[illegible]
Total	2.05	2.11	1.82	2.04	2.01	[illegible]
Deaths:						
Officers	.16	.17	....	....	....	....
Enlisted men	.08	.09	.11	....	....	....
Total	.09	.10	.10	....	....	....
Discharges:						
Enlisted men	.12	.09	.11	.34	....	....
Typho-malarial fever.						
Admissions:						
Enlisted men	.31	.29	.35	.12	....	[illegible]
Total	.29	.26	.34	.12	....	[illegible]
Noneffectiveness:						
Enlisted men	.05	.05	.05	.01	....	[illegible]
Total	.05	.05	.05	.01	....	[illegible]
Deaths:						
Enlisted men	.04	.02	.11	.11	....	....
Total	.04	.02	.10	.11	....	....
Diarrheal diseases.						
Admissions:						
Officers	55.82	53.03	77.78	102.56	193.55	[illegible]
Enlisted men	118.33	121.57	130.50	96.59	133.07	[illegible]
Total	114.54	115.35	129.95	96.62	133.80	[illegible]
Noneffectiveness:						
Officers	1.17	1.12	1.13	3.65	1.85	[illegible]
Enlisted men	1.33	1.27	1.51	1.46	1.58	[illegible]
Total	1.32	1.26	1.51	1.47	1.59	[illegible]
Deaths:						
Officers	.16	.17	....	....	....	....
Enlisted men	.01	.02	....	....	....	....
Total	.02	.04	....	....	....	....
Discharges:						
Enlisted men	.12	.15	.11	....	....	....
Septic diseases (excluding erysipelas).						
Admissions:						
Officers	.23	.24	....	....	....	....
Enlisted men	.09	.12	.12	....	....	....
Total	.10	.13	.12	....	....	....
Noneffectiveness:						
Officers	.03	.03	....	....	....	....
Enlisted men	.001	.002	.001	....	....	....
Total	.003	.01	.001	....	....	....
Deaths:						
Enlisted men	.01	.02	....	....	....	....
Total	.01	.02	....	....	....	....

ngths of service, expressed in ratios per 1,000 of their mean strengths.

ears ending December 31, 1892.]

Nativities.							Length of service—years.	
candina-vian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1.	1 and over.
750.00	214.28	250.00	500.00	333.33	125.00	222.22	60.98	164.13
131.93	102.00	113.60	109.86	142.18	139.71	105.23	194.08	129.46
133.73	104.58	114.53	110.96	143.07	139.27	106.06	193.28	132.01
36.95	8.80	9.58	9.58	1.82	.68	2.13	3.44	6.55
3.24	2.54	3.51	2.15	4.23	2.72	2.59	5.29	3.01
3.34	2.68	3.55	2.17	4.22	2.66	2.59	5.28	3.27
....	....	....	....	....	....	....	....	.96
.67	....	....	....	1.41	....	.75	1.90	.83
.66	....	....	....	1.41	....	.74	1.88	.84
....	....	....	....	....	....	....	.07	.02
....	142.85	....	....	....	125.00	777.78	12.20	45.89
64.87	65.22	77.46	42.25	69.55	51.47	56.28	102.44	68.05
64.68	66.99	76.93	42.13	69.23	53.57	61.54	101.80	66.43
....	4.10	....	....	....	2.40	7.60	5.17	2.03
2.03	1.18	2.69	1.25	2.59	1.54	1.89	3.13	1.77
2.02	1.34	2.68	1.25	2.58	1.56	1.93	3.15	1.80
....	....	....	....	....	....	....	....	.16
....	....	....	....	....	3.37	....	....	.10
....	....	....	....	....	3.24	....	....	.11
....	....	....	1.29	....	....	....	.27	.08
.73	1.67	....	1.41	1.55	....	....	.37	.30
.73	1.63	....	1.40	1.54	....	....	.37	....
.11	.37	....	.04	.12	....	....	.05	.05
.11	.36	....	.04	.12	....	....	.05	.05
....	....	....	....	....	....	....	....	.05
....	....	....	....	....	....	....	....	.05
....	214.29	250.00	....	....	125.00	111.11	....	56.90
116.62	115.38	89.50	88.73	89.64	128.68	72.59	153.07	109.63
116.28	117.65	90.60	88.48	89.23	128.57	72.87	152.14	105.76
....	8.21	2.74	....	....	2.05	.30	....	1.19
1.17	1.18	.80	1.03	2.16	1.58	.55	1.60	1.26
1.17	1.34	.81	1.03	2.15	1.59	.55	1.59	1.26
....	....	....	....	....	....	....	....	.16
....	....	....	....	....	....	....	....	.02
....	....	....	....	....	....	....	....	.03
.67	....	....	....	....	....	....	.14	.12
....	....	....	....	....	....	....	....	.23
....	....	....	....	....	....	....	....	.11
....	....	....	....	....	....	....	....	.12
....	....	....	....	....	....	....	....	.03
....	....	....	....	....	....	....	....	.002
....	....	....	....	....	....	....	....	.004
....	....	....	....	....	....	....	....	.02
....	....	....	....	....	....	....	....	.02

TABLE XIX.—*The relation of certain classes of* dis

Orders of diseases.	Total.	Nativities.				
		American U. S.	Irish.	German.	English.	Canadia
Venereal diseases.						
Admissions:						
Officers	5.05	5.08	......	25.64	......	......
Enlisted men	79.34	93.32	54.49	53.88	61.09	[illegible]
Total	74.83	85.30	53.93	53.74	60.36	[illegible]
Noneffectiveness:						
Officers	.50	.52	......	.28	......	......
Enlisted men	5.36	6.33	3.71	3.84	3.76	[illegible]
Total	5.07	5.80	3.67	3.82	3.71	
Deaths:						
Officers	.16	.17	......	......	......	......
Total	.01	.02	......	......	......	......
Discharges:						
Enlisted men	2.31	2.92	1.38	.90	1.07	[illegible]
Zoögenous diseases.						
Admissions:						
Officers	1.61	1.69	......	......	......	......
Enlisted men	51.27	65.51	33.90	14.60	28.02	[illegible]
Total	48.25	59.71	33.55	14.53	27.68	[illegible]
Noneffectiveness:						
Officers	.02	.02	......	......	......	......
Enlisted men	1.59	2.16	.81	.31	.60	[illegible]
Total	1.51	1.98	.80	.31	.59	[illegible]
Deaths:						
Enlisted men	.01	......	.11	......	......	......
Total	.01	......	.10	......	......	......
Discharges:						
Enlisted men	.03	.02	......	.11	......	......
Dietic diseases.						
Admissions:						
Officers	7.12	6.78	22.22	25.64	......	......
Enlisted men	42.13	34.23	97.41	30.68	54.47	[illegible]
Total	40.01	31.74	96.64	30.66	53.83	[illegible]
Noneffectiveness:						
Officers	.12	.09	1.28	.35	......	......
Enlisted men	.51	.43	1.12	.38	.64	
Total	.48	.40	1.12	.38	.63	
Deaths:						
Officers	.16	.17	......	......	......	......
Enlisted men	.18	.11	.42	.22	......	......
Total	.17	.12	.42	.22	......	......
Discharges:						
Enlisted men	.19	.27	.11	......	.36	......
Constitutional diseases (including muscular rheumatism).						
Admissions:						
Officers	78.79	75.79	188.89	51.28	96.78	[illegible]
Enlisted men	81.20	83.06	84.11	80.51	66.15	[illegible]
Total	81.05	82.42	85.19	80.37	66.51	[illegible]
Noneffectiveness:						
Officers	7.31	6.65	18.04	1.33	26.75	[illegible]
Enlisted men	3.95	4.06	4.27	3.92	2.58	
Total	4.15	4.29	4.41	3.91	2.86	
Deaths:						
Officers	.31	.17	7.58	......	......	......
Enlisted men	.18	.11	.11	.34	[illegible]	......
Total	.19	.12	.21	.33	.35	......
Discharges:						
Enlisted men	2.08	1.93	2.33	2.81	1.07	[illegible]
Developmental diseases.						
Admissions:						
Officers	.46	.48	......	......	......	......
Enlisted men	.52	.56	.46	.49	1.17	......
Total	.52	.55	.46	.49	1.15	......
Noneffectiveness:						
Officers	.44	.46	......	......	......	......
Enlisted men	.05	.04	.03	.12	.10	......
Total	.07	.08	.03	.11	.10	......
Discharges:						
Enlisted men	.80	.62	1.06	1.01	1.42	

to nativities and lengths of service, etc.—Continued.

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1.	1 and over.
....	....	....	....	....	....	....	24.39	4.68
63.41	58.53	34.42	57.75	69.55	73.53	41.60	143.79	63.20
63.23	57.19	34.19	57.59	69.23	71.43	41.29	143.08	58.91
....	....	....	....	....	....	....	1.64	.48
4.12	4.17	2.15	3.56	4.41	3.59	2.61	9.01	4.45
4.11	4.07	2.13	3.54	4.39	3.49	2.59	8.97	4.16
....	....	....	....	....	....	....	....	.16
....	....	....	....	....	....	....	....	.02
2.67	....	....	1.29	....	....	1.49	5.15	1.60
....	....	....	....	....	....	....	24.39	1.17
54.67	26.76	25.82	45.07	41.73	18.38	23.65	213.88	10.56
54.50	26.15	25.64	44.94	41.54	17.86	23.48	212.76	9.87
....	....	....	....	....	....	....	.63	.01
1.29	.73	.68	.79	.96	.46	.52	6.81	.28
1.29	.72	.68	.78	.95	.45	.52	6.78	.26
....	....	....	....	....	....	....	....	.02
....	....	....	....	....	....	....	....	.02
....	....	....	....	....	....	....	.07	.02
....	....	....	....	....	....	....	....	7.26
20.41	53.51	13.77	28.17	15.45	58.82	26.92	17.87	48.20
20.35	52.29	13.68	28.09	15.38	57.15	26.72	17.77	45.20
....	....	....	....	....	....	....	....	.12
.24	.79	.20	.27	.16	.59	.27	.24	.57
.24	.77	.20	.27	.16	.58	.27	.24	.54
....	....	....	....	....	....	....	....	.16
....	1.53	1.57	....	....	....	....	....	.22
....	1.48	1.56	....	....	....	....	....	.21
....	....	....	....	....	....	....	.41	.14
....	142.85	250.00	....	....	250.00	....	24.39	79.84
74.35	51.84	92.94	80.28	72.64	51.47	68.52	72.31	83.41
74.13	53.92	94.01	80.06	72.31	57.15	68.01	72.03	83.16
....	3.71	2.74	....	....	206.66	....	.63	7.44
4.30	1.39	6.85	5.05	2.47	.68	1.97	3.65	4.02
4.29	1.44	6.83	5.03	2.45	6.57	1.95	3.63	4.27
....	....	....	....	....	....	....	....	.32
.67	....	1.57	....	1.41	....	....	....	.22
.66	....	1.56	....	1.41	....	....	....	.23
2.00	....	1.57	5.15	2.82	....	1.49	1.97	2.10
....	....	....	....	....	....	....	....	.47
.73	....	....	....	....	....	....	1.19	.35
.73	....	....	....	....	....	....	1.18	.36
....	....	....	....	....	....	....	....	.45
.13	....	....	....	....	....	....	.09	.04
.13	....	....	....	....	....	....	.09	.07
1.33	1.53	1.57	....	4.24	....	....	1.36	.66

TABLE XIX.—*The relation of certain classes of di*

Orders of diseases.	Total.	Nativities.				
		American U.S.	Irish.	German.	English.	Can
Parasitic diseases.						
Admissions:						
Officers	1.15	1.21	....	....	....	....
Enlisted men	3.06	3.34	1.62	4.05	1.95	[illegible]
Total	2.94	3.15	1.60	4.03	1.92	[illegible]
Noneffectiveness:						
Officers	.05	.05	....	....	....	....
Enlisted men	.08	.09	.06	.09	.05	[illegible]
Total	.08	.09	.06	.09	.05	[illegible]
Diseases of the nervous system.						
Admissions:						
Officers	64.56	62.25	77.78	230.76	32.26	....
Enlisted men	54.22	56.96	52.41	47.74	50.97	[illegible]
Total	54.83	57.44	52.67	48.61	50.75	[illegible]
Noneffectiveness:						
Officers	6.00	5.64	10.16	32.29	1.06	[illegible]
Enlisted men	1.52	1.43	1.68	1.57	1.28	[illegible]
Total	1.79	1.81	1.77	1.72	1.28	[illegible]
Deaths:						
Officers	2.52	2.66	....	....	....	....
Enlisted men	.41	.31	.85	.11	1.07	[illegible]
Total	.57	.59	.83	.11	1.05	[illegible]
Discharges:						
Enlisted men	2.86	2.35	3.91	3.14	3.91	[illegible]
Diseases of the eye.						
Admissions:						
Officers	15.85	15.74	11.11	51.28	....	....
Enlisted men	20.16	21.84	17.12	15.83	16.34	[illegible]
Total	19.90	21.28	17.06	16.00	16.15	[illegible]
Noneffectiveness:						
Officers	1.89	1.88	.67	9.97	....	....
Enlisted men	.67	.67	.69	.61	.45	[illegible]
Total	.75	.78	.69	.65	.44	[illegible]
Discharges:						
Enlisted men	1.21	1.02	1.38	1.57	2.13	[illegible]
Diseases of the ear.						
Admissions:						
Officers	3.68	3.15	11.11	....	....	....
Enlisted men	8.42	7.70	7.52	8.84	10.51	[illegible]
Total	8.13	7.28	7.56	8.79	10.38	[illegible]
Noneffectiveness:						
Officers	.17	.17	.18	....	....	....
Enlisted men	.37	.36	.25	.28	.74	[illegible]
Total	.35	.34	.25	.28	.73	[illegible]
Discharges:						
Enlisted men	.60	.69	.21	.22	1.07	....
Diseases of the nose.						
Admissions:						
Officers	3.45	3.15	11.11	25.64	....	....
Enlisted men	1.94	1.99	1.39	2.09	1.56	[illegible]
Total	2.04	2.09	1.49	2.20	1.54	[illegible]
Noneffectiveness:						
Officers	.74	.74	1.79	.42	....	....
Enlisted men	.10	.09	.13	.07	.15	[illegible]
Total	.14	.15	.15	.07	.15	[illegible]
Discharges:						
Enlisted men	.18	.20	.21	.22	....	....
Diseases of the respiratory system.						
Admissions:						
Officers	130.03	126.63	211.11	282.05	129.03	[illegible]
Enlisted men	124.17	132.63	120.32	95.61	135.02	[illegible]
Total	124.53	132.09	121.37	96.50	134.95	[illegible]
Noneffectiveness:						
Officers	5.47	4.93	21.32	34.32	.97	
Enlisted men	3.31	3.54	3.44	2.53	2.60	
Total	3.44	3.65	3.62	2.68	2.58	

to nativities and lengths of service, etc.—Continued.

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1.	1 and over.
....	....	....	....	....	....	....	....	1.17
1.46	8.36	1.72	2.82	4.64	3.68	.82	7.19	2.02
1.45	8.17	1.71	2.81	4.62	3.57	.81	7.15	1.96
....	....	....	....	....	....	....	....	.05
.01	.12	.01	.04	.05	.03	.01	.19	.05
.01	.12	.01	.04	.05	.03	.01	.19	.05
....	71.43	250.00	....	....	250.00	333.33	....	65.79
51.03	30.10	43.03	46.48	52.55	80.88	54.65	64.89	51.55
50.87	31.05	44.44	46.35	52.31	85.71	56.68	64.51	52.60
....	.39	4.11	....	....	50.98	18.25	....	6.11
1.89	3.18	1.24	.87	2.01	3.20	2.60	1.60	1.50
1.88	3.12	1.26	.87	2.00	4.57	2.72	1.59	1.84
....	....	....	....	....	....	....	....	2.57
....	....	1.57	1.29	....	....	....	34	.42
....	....	1.56	1.28	....	....	....	.34	.63
3.33	1.53	1.57	3.86	4.24	3.37	4.47	3.53	2.70
....	....	....	....	....	....	111.11	....	16.15
24.78	25.08	15.49	9.86	23.18	33.09	22.02	21.73	19.77
24.71	24.51	15.38	9.83	23.08	32.14	22.67	21.60	19.51
....	....	....	....	....	....	2.13	....	1.93
.68	1.04	.49	.24	.81	1.52	1.38	.61	.69
.68	1.02	.48	.23	.81	1.48	1.39	.61	.78
1.33	....	1.57	....	....	....	2.24	1.09	1.24
250.00	....	....	....	....	125.00	....	....	3.75
13.85	8.36	15.49	7.04	17.00	18.38	13.05	13.35	7.18
14.53	8.17	15.38	7.02	16.92	21.43	12.95	13.27	6.93
4.11	....	....	....	....	1.37	....	....	.17
.42	.27	.34	.28	.26	2.56	1.00	.64	.30
.43	.26	.34	.28	.26	2.52	.99	.64	.29
....	....	....	....	....	3.37	3.73	.95	.51
....	....	....	....	....	....	....	....	3.51
4.37	6.69	....	....	1.55	3.68	....	2.15	1.89
4.36	6.54	....	....	1.54	3.57	....	2.14	2.01
....	....	....	....	....	....	....	....	.76
.23	.27	....	....	.11	.02	....	.09	.10
.22	.26	....	....	.11	.02	....	.09	.15
....	....	....	....	....	....	....	.14	.19
....	142.85	....	....	....	250.00	333.33	85.36	130.88
113.72	128.76	91.23	83.10	94.28	128.68	93.80	153.88	116.74
113.37	129.09	90.60	82.86	93.84	132.14	95.55	153.47	117.77
....	3.52	....	....	....	5.82	5.17	.90	5.56
4.19	5.12	3.12	1.75	1.53	4.49	1.77	3.92	3.15
4.17	5.08	3.10	1.74	1.52	4.53	1.79	3.90	3.33

TABLE XIX.—*The relation of certain classes of di*

Orders of diseases.	Total.	Nativities.				
		American U. S.	Irish.	German.	English.	Canadi
Diseases of the respiratory system—Continued.						
Deaths:						
Officers	1.42	1.49	......	......	......	......
Enlisted men	1.41	1.44	1.48	1.01	2.13	[illegible]
Total	1.41	1.45	1.46	1.00	2.10	[illegible]
Discharges:						
Enlisted men	2.36	2.57	1.90	2.02	1.07	[illegible]
Diseases of the circulatory system.						
Admissions:						
Officers	5.97	5.57	......	......	32.26	......
Enlisted men	6.81	6.08	8.33	9.08	7.39	[illegible]
Total	6.76	6.03	8.24	9.04	7.69	[illegible]
Noneffectiveness:						
Officers	1.91	1.74	......	......	9.01	......
Enlisted men	.57	.47	.72	.89	.63	[illegible]
Total	.65	.58	.71	.89	.73	[illegible]
Deaths:						
Officers	.94	1.00	......	......	......	......
Enlisted men	.41	.38	.74	.34	.36	[illegible]
Total	.45	.45	.73	.33	.35	[illegible]
Discharges:						
Enlisted men	1.78	1.57	2.83	2.13	2.13	[illegible]
Diseases of the digestive system.						
Admissions:						
Officers	142.89	144.79	111.11	128.22	96.78	[illegible]
Enlisted men	173.94	186.04	152.13	149.23	166.14	[illegible]
Total	172.06	182.30	151.71	149.13	165.31	[illegible]
Noneffectiveness:						
Officers	7.20	7.42	4.08	3.37	.97	[illegible]
Enlisted men	2.98	3.08	2.70	3.13	2.77	[illegible]
Total	3.24	3.48	2.71	3.13	2.75	[illegible]
Deaths:						
Officers	1.89	1.83	7.58	......	......	......
Enlisted men	.33	.22	.42	.67	.36	......
Total	.45	.41	.52	.67	.35	......
Discharges:						
Enlisted men	1.64	1.55	1.59	1.80	1.42	[illegible]
Diseases of the lymphatic system.						
Admissions:						
Officers	.92	.97	......	......	......	......
Enlisted men	5.79	6.22	5.32	5.65	4.28	[illegible]
Total	5.49	5.74	5.27	5.62	4.23	[illegible]
Noneffectiveness:						
Officers	.03	.03	......	......	......	......
Enlisted men	.50	.52	.63	.35	.37	[illegible]
Total	.47	.47	.62	.35	.37	[illegible]
Deaths:						
Enlisted men	.01	.02	......	......	......	......
Total	.01	.02	......	......	......	......
Discharges:						
Enlisted men	.10	.07	.21	......	.36	......
Diseases of the genito-urinary system.						
Admissions:						
Officers	16.54	15.98	22.22	51.28	32.26	[illegible]
Enlisted men	15.85	17.77	10.87	14.97	10.12	[illegible]
Total	15.90	17.61	10.99	15.15	10.38	[illegible]
Noneffectiveness:						
Officers	2.09	2.07	3.07	5.41	.53	[illegible]
Enlisted men	.94	1.00	.68	.84	.85	[illegible]
Total	1.01	1.10	.70	.86	.85	[illegible]
Deaths:						
Officers	1.26	1.16	......	......	......	[illegible]
Enlisted men	.26	.27	.32	.22	......	[illegible]
Total	.34	.37	.31	.22	......	[illegible]
Discharges:						
Enlisted men	.92	.95	.53	.79	1.07	[illegible]

o nativities and lengths of service, etc.—Continued.

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1.	1 and over.
....	....	....	....	....	....	....	....	1.44
4.00	....	....	....	1.41	....	....	1.76	1.32
3.98	....	....	....	1.41	....	....	1.75	1.34
4.67	7.65	1.57	....	....	....	....	3.05	2.19
....	71.43	....	....	....	....	111.11	....	6.09
4.37	10.02	5.16	8.45	6.18	11.03	4.08	7.56	6.63
4.36	11.44	5.13	8.43	6.15	10.71	4.86	7.52	6.59
....	.39	....	....	....	....	93.98	....	1.95
.65	1.15	.31	.88	.77	.63	.48	.50	.59
.65	1.13	.31	.88	.76	.62	1.16	.50	.69
....	....	....	....	....	....	....	....	.96
....	....	....	....	1.41	....	....	.14	.48
....	....	....	....	1.41	....	....	.13	.52
1.34	3.06	1.57	3.86	1.41	....	2.24	1.70	1.80
....	....	500.00	....	....	250.00	111.11	48.78	144.69
180.77	137.13	177.28	157.74	165.38	161.75	141.11	233.38	159.04
180.22	133.98	179.49	157.30	164.61	164.29	140.87	232.28	158.03
....	....	4.11	....	....	1.37	.30	.87	7.33
3.05	1.90	3.15	1.94	1.90	2.16	3.22	3.71	2.80
3.04	1.85	3.16	1.94	1.89	2.14	3.20	3.70	3.13
....	....	....	....	....	....	....	....	1.93
.67	....	....	....	1.41	....	.75	.20	.36
.66	....	....	....	1.41	....	.74	.20	.51
1.34	1.53	4.72	....	2.82	3.37	3.73	2.17	1.51
....	....	....	....	....	....	....	....	.94
4.37	3.34	5.16	5.63	1.55	7.35	4.08	7.86	5.27
4.36	3.27	5.13	5.62	1.54	7.14	4.05	7.81	4.96
....	....	....	....	....	....	....	....	.03
.51	.14	.34	.39	.33	.54	.53	.67	.45
.51	.13	.34	.39	.32	.53	.53	.67	.42
....	....	....	....	....	....	....	....	.02
....	....	....	....	....	....	....	....	.02
....	....	....	....	....	....	.75	.20	.07
....	....	....	....	....	....	....	....	16.86
16.77	15.06	12.05	9.86	15.45	11.03	8.97	23.66	13.90
16.72	14.71	11.96	9.83	15.38	10.71	8.91	23.51	14.12
....	....	....	....	....	....	....	....	2.13
1.29	.65	1.36	.68	.91	.44	.60	1.38	.83
1.29	.63	1.35	.68	.90	.43	.60	1.34	.93
....	....	....	....	....	....	....	....	1.28
....	....	....	....	1.41	....	....	.14	.29
....	....	....	....	1.41	....	....	.13	.38
1.34	....	1.57	1.29	2.82	....	2.24	2.17	.61

TABLE XIX.—*The relation of certain classes of dis*

Orders of diseases.	Total.	Nativities.				
		American U. S.	Irish.	German.	English.	Canad
Diseases of the locomotor system (excluding muscular rheumatism).						
Admissions:						
Officers	3.68	3.87				
Enlisted men	4.83	5.08	3.35	5.28	5.45	[illegible]
Total	4.76	4.97	3.32	5.25	5.38	[illegible]
Noneffectiveness:						
Officers	.50	.53				
Enlisted men	.45	.48	.33	.49	.29	[illegible]
Total	.45	.49	.33	.49	.29	[illegible]
Deaths:						
Enlisted men	.01	.02				
Total	.01	.02				
Discharges:						
Enlisted men	.98	.95	1.27	.79	1.42	[illegible]
Diseases of the integumentary system.						
Admissions:						
Officers	29.18	29.54	33.33			
Enlisted men	82.19	88.60	68.14	76.58	73.93	[illegible]
Total	78.97	83.24	67.78	76.21	73.05	[illegible]
Noneffectiveness:						
Officers	1.33	1.29	2.43			
Enlisted men	2.17	2.28	2.20	2.01	1.62	[illegible]
Total	2.12	2.19	2.20	2.00	1.61	[illegible]
Deaths:						
Officers	.16	.17				
Total	.01	.02				
Discharges:						
Enlisted men	.23	.27	.11	.22	.36	
Unclassified.						
Admissions:						
Officers	12.40	12.83	11.11			
Enlisted men	18.80	21.25	14.69	14.24	13.23	[illegible]
Total	18.41	20.49	14.66	14.17	13.07	[illegible]
Noneffectiveness:						
Officers	.50	.52	.21			
Enlisted men	.41	.45	.34	.32	.16	[illegible]
Total	.42	.46	.34	.32	.16	[illegible]
Deaths:						
Enlisted men	.03	.04				
Total	.02	.04				
Discharges:						
Enlisted men	.07	.04	.11	.22		
Total for diseases.						
Admissions:						
Officers	786.82	773.12	944.44	1,333.33	806.45	[illegible]
Enlisted men	1,110.73	1,183.64	1,075.20	919.00	1,049.42	[illegible]
Total	1,091.07	1,146.33	1,073.85	920.97	1,046.52	[illegible]
Noneffectiveness:						
Officers	46.04	44.59	69.43	98.26	46.80	[illegible]
Enlisted men	32.42	34.49	30.68	28.27	26.73	[illegible]
Total	33.25	35.41	31.07	28.60	26.97	[illegible]
Deaths:						
Officers	10.08	10.12	15.15			[illegible]
Enlisted men	4.43	4.10	6.66	3.82	4.98	[illegible]
Total	4.87	4.81	6.78	3.79	4.90	[illegible]
Discharges:						
Enlisted men	18.60	18.26	18.83	18.29	18.85	[illegible]
Total for injuries.						
Admissions:						
Officers	68.47	67.07	88.89	51.28	193.53	
Enlisted men	260.08	269.16	275.80	223.37	243.98	[illegible]
Total	248.43	250.78	273.89	222.52	243.39	[illegible]
Noneffectiveness:						
Officers	5.56	5.49	6.05	7.86	9.45	
Enlisted men	8.36	8.33	9.74	7.81	7.85	[illegible]
Total	8.19	8.07	9.70	7.81	7.87	[illegible]

to nativities and lengths of service, etc.—Continued.

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1.	1 and over.
......	......	......	......	......	......	......	......	3.75
5.83	5.02	1.72	7.04	4.64	3.68	4.89	6.60	4.38
5.81	4.90	1.71	7.02	4.62	3.57	4.86	6.56	4.33
......	......	......	......	......	......	......	......	.51
.94	.38	.05	.15	.21	.09	.35	.61	.41
.94	.37	.05	.15	.21	.09	.35	.60	.41
......	......	......	......	......	......	......	......	.02
......	......	......	......	......	......	......	......	.02
2.00	......	......	2.57	......	......	......	1.36	.88
......	......	250.00	......	......	125.00	......	12.20	29.50
64.15	71.90	75.73	71.83	77.28	58.82	67.70	122.52	72.09
63.96	70.26	76.93	71.63	76.93	60.71	67.21	121.85	68.97
......	......	13.00	......	......	24.29	......	.20	1.35
1.46	2.33	1.96	1.76	1.61	1.94	2.51	3.02	1.96
1.46	2.28	2.03	1.75	1.60	2.58	2.50	3.00	1.92
......	......	......	......	......	......	......	......	.16
......	......	......	......	......	......	......	......	.02
......	......	......	......	1.41	......	......	.47	.17
......	......	......	......	......	......	......	36.58	11.94
18.95	18.39	17.22	16.90	12.36	11.03	15.50	33.37	15.15
18.89	17.97	17.09	16.85	12.31	10.71	15.38	33.39	14.91
......	......	......	......	......	......	......	1.07	.40
.53	.51	.30	.74	.29	1.25	.38	.76	.32
.53	.50	.30	.74	.28	1.21	.37	.76	.34
......	......	......	......	......	......	......	.07	.02
......	......	......	......	......	......	......	.07	.02
......	......	......	......	......	......	......	.14	.05
1,000.00	1,000.00	1,750.00	500.00	333.33	1,625.00	2,111.11	329.28	795.60
1,032.07	943.15	908.78	880.28	978.36	1,055.15	825.45	1,597.09	988.99
1,031.97	944.44	914.53	879.21	975.38	1,071.43	834.81	1,589.41	974.78
41.06	29.13	36.27	9.58	1.82	295.62	129.87	14.55	46.65
32.47	29.38	29.57	23.83	27.87	30.05	25.22	47.59	28.62
32.50	29.38	29.61	23.79	27.74	37.64	25.98	47.39	29.95
......	......	......	......	......	......	......	......	10.27
6.00	1.53	4.72	1.29	8.47	3.37	1.49	4.54	4.40
5.98	1.48	4.67	1.28	8.44	3.24	1.47	4.51	4.96
22.00	15.29	15.72	19.31	19.77	10.10	22.37	26.38	16.65
......	214.28	250.00	......	......	......	111.11	12.20	69.54
258.77	264.21	203.10	236.61	194.74	261.03	191.69	326.91	243.35
257.99	263.06	203.42	235.95	193.84	253.58	191.10	325.01	230.58
......	21.70	8.90	......	......	......	3.04	.40	5.66
9.30	12.01	6.04	6.90	6.57	5.63	6.20	9.62	8.04
9.27	12.23	6.06	6.88	6.54	5.46	6.17	9.56	7.87

TABLE XIX.—*The relation of certain classes of disea*

Orders of diseases.	Total.	Nativities.				
		American U. S.	Irish.	German.	English.	Canadian.
Total for injuries—Continued.						
Deaths:						
Officers	1.42	1.33	....	....	....	....
Enlisted men	2.97	2.94	2.86	3.08	2.13	2.
Total	2.85	2.75	2.82	3.01	2.10	2.
Discharges:						
Enlisted men	2.62	2.55	3.39	2.47	2.13	2.
Total diseases and injuries.						
Admissions:						
Officers	855.29	840.20	1,033.33	1,384.62	1,000.00	57
Enlisted men	1,370.81	1,452.79	1,350.99	1,142.36	1,293.39	1,339
Total	1,339.59	1,397.11	1,347.72	1,143.50	1,289.89	1,32
Noneffectiveness:						
Officers	51.60	50.08	75.49	106.12	56.25	23.
Enlisted men	40.77	42.81	40.42	36.08	34.58	39.
Total	41.43	43.48	40.78	36.41	34.84	39.1
Deaths:						
Officers	11.49	11.45	15.15	....	....	37.
Enlisted men	7.40	7.04	9.52	6.85	7.11	7.
Total	7.72	7.56	9.60	6.80	7.00	8.
Discharges:						
Enlisted men	21.22	20.81	22.22	20.76	20.99	28.

to nativities and lengths of service, etc.—Continued.

Nativities.							Length of service—years	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1.	1 and over.
166.67	....	....	....	....	....	....	....	1.44
4.00	6.12	1.57	6.44	1.41	3.37	2.98	2.58	3.07
4.65	5.93	1.56	6.41	1.41	3.23	2.95	2.56	2.92
3.33	3.06	1.57	1.29	2.82	....	2.24	3.59	2.38
1,000.00	1,214.29	2,000.00	500.00	333.33	1,625.00	2,222.22	341.48	865.14
1,290.82	1,207.36	1,111.88	1,116.90	1,173.11	1,316.18	1,017.13	1,923.99	1,232.34
1,289.99	1,207.52	1,117.95	1,115.17	1,169.23	1,325.00	1,025.91	1,914.42	1,205.37
41.06	50.83	45.16	9.58	1.82	295.62	132.91	14.95	52.31
41.77	41.39	35.61	30.73	34.44	35.67	31.42	57.20	36.66
41.77	41.60	35.67	30.67	34.29	43.10	32.16	56.95	37.81
166.67	....	....	....	....	....	....	....	11.71
10.00	7.65	6.29	7.72	9.89	6.73	4.47	7.12	7.47
10.62	7.41	6.23	7.69	9.85	6.47	4.42	7.06	7.88
25.33	18.35	17.30	20.59	22.60	10.10	24.61	29.98	19.08

TABLE XX.—*The relation of certain specified diseases to the several arms of*

[Annual rates for the period of

Names of diseases.	Total.	Arms of service.						
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.
Cerebro-spinal fever.								
Admissions:								
Officers	.23	.57	....	....	....	....	....	....
Enlisted men	.06	.10	....	....	....	....	....	....
Total	.07	.13	....	....	....	....	....	....
Noneffectiveness:								
Officers	.001	.003	....	....	....	....	....	....
Enlisted men	.004	.01	....	....	....	....	....	....
Total	.004	.01	....	....	....	....	....	....
Deaths:								
Officers	.16	.39	....	....	....	....	....	....
Enlisted men	.03	.03	....	....	....	....	....	....
Total	.04	.06	....	....	....	....	....	....
Chicken pox.								
Admissions:								
Enlisted men	.43	.40	.29	.36	....	....	....	1.82
Total	.40	.38	.28	.33	....	....	....	1.82
Noneffectiveness:								
Enlisted men	.01	.01	.01	.01	....	....	.03	.05
Total	.01	.01	.01	.01	....	....	.02	.05
Dengue.								
Admissions:								
Officers	.46	....	1.15	....	....	4.22	....	....
Enlisted men	1.04	.67	2.45	.12	....	....	2.92	....
Total	1.00	.63	2.39	.11	....	.69	2.46	....
Noneffectiveness:								
Officers	.01	....	.04	....	....	.07	....	....
Enlisted men	.02	.01	.05	.001	....	....	.07	....
Total	.02	.01	.05	.001	....	.01	.06	....
Diphtheria.								
Admissions:								
Officers	.46	....	1.15	....	....	....	2.65	....
Enlisted men	.28	.23	.47	.12	.85	....	.49	.20
Total	.29	.22	.50	.11	.78	....	.82	.20
Noneffectiveness:								
Officers	.01	....	.06	....	....	....	.02	....
Enlisted men	.01	.01	.01	.01	.01	....	.01	.01
Total	.01	.01	.02	.01	.01	....	.01	.01
Deaths:								
Enlisted men	.01	....	....	....	.78	....	....	....
Total	.01	....	....	....	.69	....	....	....
Enteric fever.								
Admissions:								
Officers	3.91	4.01	6.88	5.15	....	4.22	....	....
Enlisted men	5.14	5.66	7.42	3.08	4.27	....	2.43	1.82
Total	5.06	5.54	7.39	3.21	3.88	.69	2.05	1.82
Noneffectiveness:								
Officers	1.14	1.01	1.98	2.34	....	.46	....	....
Enlisted men	.76	.79	1.12	.48	1.29	....	.40	.33
Total	.78	.80	1.16	.60	1.17	.08	.34	.33
Deaths:								
Officers	.31	.78	....	....	....	....	....	....
Enlisted men	.49	.46	.80	.43	....	....	....	....
Total	.47	.48	.75	.40	....	....	....	....
Discharges:								
Enlisted men	.03	.03	....	....	.78	....	....	....
Influenza.								
Admissions:								
Officers	152.32	168.38	167.43	245.70	67.23	16.88	132.27	....
Enlisted men	123.03	120.95	146.24	143.32	189.58	191.85	97.67	39.34
Total	124.81	123.57	147.27	149.90	178.28	163.08	103.03	39.34
Noneffectiveness:								
Officers	4.92	4.93	5.46	9.43	1.96	.47	4.25	....
Enlisted men	2.16	2.24	2.19	2.47	4.62	3.03	1.91	1.04
Total	2.33	2.39	2.33	2.92	4.38	2.61	2.27	1.04

service and ages of individuals, expressed in ratios per 1,000 of their mean strengths.

years ending December 31, 1892.]

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	....	....	....	1.52	....	....	....	....	....
....	.05	.05	.08	....	.21	....	....	....	....
....	.05	.06	.08	.15	.19	....	....	....	....
....	....	....	....	.01	....	....	....	....	....
....	.01	.001	.001	....	.01	....	....	....	....
....	.01	.001	.001	.001	.01	....	....	....	....
....	....	....	....	1.04	....	....	....	....	....
....	....	.05	....	....	.19	....	....	....	....
....	....	.04	....	.13	.17	....	....	....	....
....	.86	.40	.25	....	....	.34	....	....	....
....	.85	.39	.24	....	....	.29	....	....	....
....	.03	.01	.01	....	....	.01	....	....	....
....	.03	.01	.01	....	....	.01	....	....	....
....	....	....	3.09	....	....	....	....	....	....
.92	1.47	1.00	.93	.82	....	1.03	1.15	....	....
.92	1.46	.97	1.04	.74	....	.87	.68	....	....
....	....	....	.08	....	....	....	....	....	....
.02	.04	.02	.02	.02	....	.02	.01	....	....
.02	.04	.02	.02	.01	....	.01	.01	....	....
....	....	2.84	....	....	....	....	....	....	....
.92	.46	.30	.17	....	.21	....	....	....	....
.92	.45	.39	.16	....	.19	....	....	....	....
....	....	.09	....	....	....	....	....	....	....
.04	.02	.01	.01	....	.004	....	....	....	....
.04	.02	.01	.004	....	.003	....	....	....	....
....	....	....	....	....	.19	....	....	....	....
....	....	....	....	....	.17	....	....	....	....
....	9.09	8.53	7.72	3.05	1.98	1.81	....	....	....
11.07	8.64	5.27	2.96	2.29	1.69	.34	....	5.62	....
11.07	8.65	5.38	3.21	2.36	1.71	.58	....	1.92	....
....	1.41	2.88	2.42	.70	.79	.35	....	....	....
1.12	1.23	.79	.53	.44	.24	.03	....	.15	....
1.12	1.23	.86	.63	.46	.29	.08	....	.05	....
....	....	.97	1.06	....	....	....	....	....	....
1.69	.79	.55	.23	....	.19	....	....	5.13	....
1.69	.78	.57	.29	....	.17	....	....	1.44	....
....	....	.05	.08	....	....	....	....	....	....
....	145.45	170.70	155.85	173.77	142.85	179.02	135.84	93.29	86.95
113.47	134.82	125.67	112.18	114.07	121.78	101.78	93.11	101.13	205.31
113.47	134.92	127.22	114.45	119.86	123.80	114.13	110.73	95.97	140.24
....	4.86	4.93	3.19	5.62	4.15	5.09	6.22	4.77	6.66
2.10	2.22	2.11	1.90	1.93	2.59	2.69	2.46	3.64	11.84
2.10	2.25	2.20	1.97	2.28	2.74	3.07	4.01	4.39	8.21

TABLE XX.—*The relation of certain specified diseases to the*

Names of diseases.	Total.	Arms of service.						
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.
Influenza—Cont'd.								
Deaths:								
Officers	.31		1.57					
Enlisted men	.43	.74	.11	.54			.44	
Total	.42	.68	.20	.50			.36	
Measles.								
Admissions:								
Officers	1.15	1.15	2.29	1.72				
Enlisted men	6.27	4.16	2.05	6.39		7.47	2.92	39.14
Total	5.95	3.99	2.06	6.09		6.25	2.46	39.14
Noneffectiveness:								
Officers	.13	.03	.51	.11				
Enlisted men	.26	.17	.09	.31		.29	.11	1.55
Total	.25	.16	.11	.29		.24	.09	1.55
Mumps.								
Admissions:								
Officers	1.15	1.72	1.15	1.72				
Enlisted men	3.34	2.58	2.10	3.67	.85	4.98	.49	14.32
Total	3.21	2.53	2.06	3.54	.78	4.10	.41	14.32
Noneffectiveness:								
Officers	.04	.06	.04	.06				
Enlisted men	.11	.09	.07	.12	.03	.16	.01	.43
Total	.11	.09	.07	.12	.03	.13	.01	.43
Scarlet fever.								
Admissions:								
Officers	.46	.57	1.15					
Enlisted men	.24	.23	.41	.12				
Total	.25	.25	.44	.11				
Noneffectiveness:								
Officers	.03	.01	.14					
Enlisted men	.02	.02	.02	.01				
Total	.02	.02	.02	.01				
Smallpox.								
Admissions:								
Enlisted men	.10	.17	.06					.20
Total	.10	.16	.06					.20
Noneffectiveness:								
Enlisted men	.01	.01	.001					.02
Total	.01	.01	.001					.02
Deaths:								
Enlisted men	.02	.03	.05					
Total	.02	.03	.05					
Varioloid.								
Admissions:								
Enlisted men	.03		.06				.49	
Total	.03		.06				.41	
Noneffectiveness:								
Enlisted men	.001		.004				.02	
Total	.001		.003				.02	
Whooping cough.								
Admissions:								
Enlisted men	.19	.23	.18	.24	.85			
Total	.18	.22	.17	.22	.78			
Noneffectiveness:								
Enlisted men	.01	.01	.01	.02	.05			
Total	.01	.01	.01	.02	.05			
Erysipelas.								
Admissions:								
Officers	1.61	3.44						
Enlisted men	1.89	2.28	1.93	1.30	2.56		1.46	1.41
Total	1.87	2.34	1.83	1.22	2.33		1.23	1.43

arms of the service and ages of individuals, etc.—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	....	....	....	....	1.36	....	....	2.00	....
....	.19	.41	.85	....	.58	1.26	1.05	....	....
....	.18	.39	.79	....	.67	1.00	.54	1.44	....
....	....	2.84	3.09	1.52	....	....	....	....	....
20.30	14.09	4.32	2.28	1.31	.21	.34	....	....	....
20.30	13.93	4.27	2.33	1.33	.19	.29	....	....	....
....	....	.64	.14	.04	....	....	....	....	....
.86	.57	.18	.10	.07	.01	.02	....	....	....
.86	.56	.20	.10	.07	.01	.02	....	....	....
....	4.55	2.84	....	....	3.97	....	....	....	....
10.15	7.07	2.51	1.10	1.15	.84	.34	....	....	....
10.15	7.04	2.52	1.04	1.03	1.14	.29	....	....	....
....	.12	.07	....	....	.15	....	....	....	....
.35	.23	.08	.04	.03	.04	.01	....	....	....
.35	.23	.08	.04	.03	.05	.01	....	....	....
....	....	2.84	....	....	1.98	....	....	....	....
....	.51	.25	.08	....	....	....	....	....	....
....	.50	.29	.08	....	.19	....	....	....	....
....	....	.04	....	....	.24	....	....	....	....
....	.04	.02	.001	....	....	....	....	....	....
....	.04	.02	.001	....	.02	....	....	....	....
1.84	.15	.05	....	.16	....	....	....	....	....
1.84	.15	.05	....	.15	....	....	....	....	....
.26	.01	.002	....	.02	....	....	....	....	....
.26	.01	.001	....	.02	....	....	....	....	....
....	.05	.05	....	....	....	....	....	....	....
....	.06	.04	....	....	....	....	....	....	....
....	.05	....	....	.16	....	....	....	....	....
....	.05	....	....	.15	....	....	....	....	....
....	.002	....	....	.01	....	....	....	....	....
....	.002	....	....	.01	....	....	....	....	....
....	.25	.15	.08	.16	.42	....	1.15	....	....
....	.25	.15	.08	.15	.38	....	.68	....	....
....	.01	.01	.01	.01	.02	....	.03	....	....
....	.01	.01	.01	.01	.02	....	.01	....	....
....	....	....	1.54	....	....	1.81	6.55	....	8.70
.92	1.83	1.30	1.86	2.29	3.37	3.44	2.30	....	....
.92	1.81	1.26	1.84	2.07	3.05	3.18	4.05	....	6.1

TABLE XX.—*The relation of certain specified diseases to the sever*

Names of diseases.	Total.	Arms of service.							
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.	All other.
***Erysipelas*—Cont'd.**									
Noneffectiveness:									
Officers	.20	.46							[illegible]
Enlisted men	.09	.10	.10	.07	.09		.04	.07	[illegible]
Total	.09	.12	.10	.06	.08		.03	.07	[illegible]
Deaths:									
Officers	.16								[illegible]
Enlisted men	.04	.06	.05						
Total	.05	.06	.05						[illegible]
Quinsy.									
Admissions:									
Enlisted men	.10	.10	.18				.49		
Total	.10	.09	.17				.41		
Noneffectiveness:									
Enlisted men	.003	.003	.003				.01		
Total	.002	.003	.003				.01		
Deaths:									
Enlisted men	.01						.44		
Total	.01						.36		
Tonsillitis.									
Admissions:									
Officers	18.84	25.20	22.94	18.90			15.87		[illegible]
Enlisted men	40.34	40.49	45.40	42.49	30.74	50.66	15.06	43.98	[illegible]
Total	39.03	39.64	44.31	40.96	27.91	42.33	15.09	43.98	[illegible]
Noneffectiveness:									
Officers	.41	.51	.50	.44			.53		[illegible]
Enlisted men	.59	.59	.64	.59	.38	.74	.21	.82	[illegible]
Total	.58	.59	.63	.58	.35	.62	.26	.82	[illegible]
Other specific febrile and acute infectious diseases.									
Admissions:									
Officers	.46		1.15	1.72					
Enlisted men	.25	.37	.06	.59					
Total	.26	.35	.11	.66					
Noneffectiveness:									
Officers	.01		.02	.05					
Enlisted men	.004	.01	.001	.01					
Total	.004	.01	.001	.02					
Bronchitis.									
Admissions:									
Officers	82.25	104.81	95.18	116.83	42.02	4.22	29.10		[illegible]
Enlisted men	83.47	79.06	93.66	104.03	130.65	137.88	24.78	67.78	[illegible]
Total	83.39	80.48	93.78	104.84	122.47	115.89	25.45	67.78	[illegible]
Noneffectiveness:									
Officers	3.07	2.79	5.00	2.67	6.42	.13	3.75		[illegible]
Enlisted men	1.45	1.45	1.43	1.72	2.36	2.16	.66	1.56	[illegible]
Total	1.55	1.53	1.60	1.78	2.74	1.82	1.14	1.56	[illegible]
Deaths:									
Enlisted men	.03	.06							
Total	.02	.06							
Discharges:									
Enlisted men	.18	.28	.11	.11			.44		
Pulmonary phthisis.									
Admissions:									
Officers	2.07	1.72	3.44	3.44					[illegible]
Enlisted men	3.62	4.12	3.86	3.31	4.27	5.81	1.46	1.41	[illegible]
Total	3.53	3.90	3.84	3.32	3.88	4.86	1.23	1.41	[illegible]
Noneffectiveness:									
Officers	1.01	.73	2.70	.25			.74		[illegible]
Enlisted men	.86	.82	.92	1.27	.59	2.15	.11	.32	[illegible]
Total	.87	.82	.98	1.21	.53	1.80	.20	.32	[illegible]
Deaths:									
Officers	.63	.78	1.57						
Enlisted men	.62	.64	.53	.65	1.56		.44	.37	[illegible]
Total	.62	.65	.60	.59	1.37		.36	.37	[illegible]
Discharges:									
Enlisted men	1.86	1.90	1.92	2.49	2.34	2.28	.89	.92	[illegible]

arms of the service and ages of individuals, etc.—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	....	....	.56	.13	....	.13	.35	....	1.31
.04	.08	.07	.09	.08	.13	.19	.05	....	....
.04	.08	.07	.12	.08	.12	.18	.17	....	.92
....	....	....	....	....	....	....	....	....	5.95
....	....	.09	....	....	.19	....	....	....	....
....	....	.09	....	....	.17	....	....	....	4.50
....	.10	.05	.17	.33	....	....	....	....	....
....	.10	.05	.16	.30	....	....	....	....	....
....	.002	.001	.01	.01	....	....	....	....	....
....	.002	.001	.004	.004	....	....	....	....	....
....	....	.05	....	....	....	....	....	....	....
....	....	.04	....	....	....	....	....	....	....
....	18.18	34.14	26.24	24.39	11.90	9.04	13.09	5.83	....
71.03	61.54	41.61	29.70	22.09	16.43	9.97	6.90	11.24	....
71.03	61.06	41.35	29.52	22.32	16.00	9.82	9.45	7.68	....
....	.20	.59	.52	.43	.13	.48	.55	.15	....
1.11	.91	.57	.42	.39	.29	.14	.09	.18	....
1.11	.90	.57	.42	.39	.27	.19	.28	.16	....
....	4.55	....	1.54	....	....	....	....	....	....
1.84	.56	.15	.08	....	....	....	....	....	....
1.84	.60	.15	.16	....	....	....	....	....	....
....	.14	....	.02	....	....	....	....	....	....
.01	.01	.004	.001	....	....	....	....	....	....
.01	.01	.004	.002	....	....	....	....	....	....
....	86.37	54.05	77.16	68.60	95.23	112.13	103.11	72.89	69.57
98.71	94.49	80.60	76.82	73.00	76.07	76.34	95.40	140.44	122.45
98.71	94.39	79.70	76.83	72.57	77.91	82.06	98.58	95.97	85.37
....	1.41	.73	1.50	1.69	3.70	3.49	9.24	1.80	3.67
2.00	1.51	1.32	1.21	1.59	1.68	1.65	2.18	4.83	4.47
2.00	1.51	1.30	1.22	1.60	1.87	1.94	5.10	2.83	3.91
....	....	....	.08	....	....	.31	....	....	....
....	....	....	.07	....	....	.25	....	....	....
....	.05	.09	....	.75	.58	.31	1.05	....	....
....	....	2.84	3.09	1.52	3.97	1.81	1.64	....	....
4.61	3.71	3.71	3.98	3.93	2.32	2.75	....	11.24	....
4.61	3.67	3.68	3.93	3.69	2.48	2.60	.68	3.84	....
....	....	1.55	1.00	.004	2.93	.55	1.47	....	....
.59	.77	.88	.94	1.11	1.04	.43	....	1.89	....
.59	.76	.90	.95	1.00	1.22	.45	.61	.65	....
....	....	....	1.06	....	4.08	....	....	....	....
....	.47	.64	.54	.75	.96	1.26	....	5.13	....
....	.46	.61	.58	.65	1.35	1.00	....	1.44	....
2.53	1.86	2.11	1.70	2.10	1.73	.63	....	5.13	....

TABLE XX.—*The relation of certain specified diseases to the several*

Names of diseases.	Total.	Arms of service.							
		Infantry.	Calvary.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.	All others.
Pneumonia and results.									
Admissions:									
Officers	2.07	2.29	3.44	3.44	....	....	....	....	....
Enlisted men	3.99	3.75	4.79	2.60	8.54	.83	2.43	6.86	[illegible]
Total	3.88	3.67	4.73	2.66	7.75	.69	2.05	6.86	[illegible]
Noneffectiveness:									
Officers	.19	.15	.28	.53	....	....	....	....	....
Enlisted men	.38	.35	.43	.30	1.73	.12	.14	.53	[illegible]
Total	.37	.34	.42	.32	1.57	.10	.12	.53	[illegible]
Deaths:									
Officers	.79	1.18	1.57	....	....	....	....	....	....
Enlisted men	.62	.61	.48	.11	.78	....	1.78	1.48	[illegible]
Total	.64	.65	.55	.10	.69	....	1.43	1.48	[illegible]
Discharges:									
Enlisted men	.01	.03	....	....	....	....	....	....	....
Pleuritis and results.									
Admissions:									
Officers	2.07	1.15	3.44	1.72	....	....	5.29	....	[illegible]
Enlisted men	2.29	2.11	2.80	1.89	5.98	.83	.97	.81	[illegible]
Total	2.15	2.06	2.84	1.88	5.43	.69	1.64	.81	[illegible]
Noneffectiveness:									
Officers	.29	.22	.13	.85	....	....	.37	....	[illegible]
Enlisted men	.13	.14	.15	.08	.25	.24	.02	.03	[illegible]
Total	.13	.15	.15	.13	.23	.20	.07	.03	[illegible]
Deaths:									
Enlisted men	.05	.03	.16	....	....	....	....	....	....
Total	.05	.03	.15	....	....	....	....	....	....
Discharges:									
Enlisted men	.07	.03	.16	....	....	.76	....	....	....
Rheumatic fever.									
Admissions:									
Officers	4.59	4.58	4.59	6.87	....	....	5.29	....	[illegible]
Enlisted men	5.33	5.40	4.91	4.97	4.27	5.81	8.75	7.26	[illegible]
Total	5.28	5.35	4.89	5,09	3.88	4.86	8.21	7.26	[illegible]
Noneffectiveness:									
Officers	.65	.60	.99	1.06	....	....	.14	....	[illegible]
Enlisted men	.57	.57	.54	.54	.39	.60	.68	.74	[illegible]
Total	.57	.57	.57	.57	.35	.50	.60	.74	[illegible]
Deaths:									
Enlisted men	.03	....	....	.22	....	....	....	....	....
Total	.02	....	....	.20	....	....	....	....	....
Discharges:									
Enlisted men	.07	.06	.11	.11	....	....	....	....	....
Myalgia and muscular rheumatism.									
Admissions:									
Officers	47.32	64.15	49.31	61.86	16.81	4.22	15.87	....	[illegible]
Enlisted men	52.57	51.48	65.15	54.21	92.22	99.67	29.15	17.35	[illegible]
Total	52.25	52.17	64.38	54.69	85.27	83.97	27.09	17.35	[illegible]
Noneffectiveness									
Officers	2.55	3.59	2.92	2.12	1.75	.02	.49	....	[illegible]
Enlisted men	1.73	1.75	1.97	2.34	2.54	2.09	1.36	.30	[illegible]
Total	1.78	1.87	2.01	2.32	2.47	1.85	1.23	.30	[illegible]
Discharges:									
Enlisted men	.76	.70	.69	1.41	1.56	.76	.44	.37	[illegible]
Other rheumatisms.									
Admissions:									
Officers	20.22	29.21	14.91	24.06	....	....	15.87	....	[illegible]
Enlisted men	19.14	19.64	22.73	17.63	23.91	16.61	16.03	13.31	[illegible]
Total	19.20	20.17	22.35	18.05	21.70	13.88	16.01	13.31	[illegible]
Noneffectiveness:									
Officers	2.17	3.08	2.99	1.72	....	....	.77	....	[illegible]
Enlisted men	1.37	1.45	1.69	1.09	1.34	.84	.80	.95	[illegible]
Total	1.41	1.54	1.75	1.13	1.21	.70	.80	.95	[illegible]
Discharges:									
Enlisted men	.88	1.10	.75	.76	2.34	.76	.89	....	[illegible]

rms of the service and ages of individuals, etc.—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	....	....	1.54	1.52	1.98	3.62	3.27	5.83	....
4.61	3.97	3.96	3.72	4.09	2.95	5.50	6.90	11.24	....
4.61	3.92	3.83	3.61	3.84	2.86	5.20	5.40	7.68	....
....	....	....	.09	.14	.10	.34	.33	.65	....
.41	.32	.40	.36	.55	.29	.51	.83	.74	1.06
.41	.32	.39	.34	.51	.27	.48	.33	.68	.32
....	....	....	....	....	1.36	1.24	1.12	3.99	....
.84	.56	.37	.54	.60	1.16	1.26	2.10	5.13	18.52
.84	.55	.35	.50	.52	1.18	1.25	1.63	4.31	4.50
....	....	....	....	.15	....	....	....	....	....
....	....	....	4.63	1.52	....	7.23	1.64	....	....
.92	1.88	1.66	2.45	3.11	2.32	4.47	2.30	....	....
.92	1.86	1.60	2.57	2.96	2.10	4.91	2.03	....	....
....	....	.67	.04	.15	....	1.17	.01	....	....
.03	.13	.10	.17	.13	.09	.20	.04	....	....
.03	.13	.12	.17	.13	.08	.35	.08	....	....
....	.05	.05	.08	....	....	.31	....	....	....
....	.05	.04	.07	....	....	.25	....	....	....
....	.14	.09	....	....	....	....	....	....	....
....	....	4.27	4.63	1.52	5.95	5.42	4.91	5.83	17.39
6.46	5.85	4.62	4.48	4.91	6.53	6.88	10.34	11.24	....
6.46	4.63	4.61	4.49	4.58	6.48	6.65	8.10	7.68	12.20
....	....	.39	.42	.88	.68	.86	.45	1.61	.60
.52	.65	.47	.54	.45	.75	.62	1.09	.40	....
.52	.64	.47	.53	.49	.75	.66	.88	1.20	.42
....	....	.05	....	....	....	....	....	....	18.52
....	....	.04	....	....	....	....	....	....	4.50
....	.09	.05	....	.15	.19	....	....	....	....
....	36.36	21.34	40.12	27.44	67.46	68.71	63.83	64.14	52.17
21.22	41.14	45.37	54.31	62.03	80.70	85.63	133.33	185.39	61.23
21.22	41.09	44.55	53.57	58.67	79.42	82.92	104.65	105.56	54.88
....	1.23	.64	.82	1.56	5.32	2.73	4.51	2.70	8.31
.86	1.12	1.41	1.68	2.21	2.10	3.51	5.89	9.66	2.51
.86	1.13	1.38	1.64	2.14	3.31	3.39	5 32	5.08	6.58
.84	.23	.41	.46	1.05	1.93	2.83	4.21	20.51	18.52
....	13.64	7.11	18.52	6.10	29.76	32.55	29.46	29.15	26.09
14.76	14.75	16.21	19.20	22.26	27.60	33.70	51.72	112.35	61.23
14.76	14.73	15.90	19.17	20.69	27.81	33.52	42.54	57.58	36.59
....	.72	1.65	2.23	.24	3.63	2.84	2.87	3.03	3.28
.79	1.10	1.23	1.22	1.62	2.23	2.11	2.64	8.32	1.73
.79	1.10	1.25	1.27	1.48	2.36	2.22	2.74	4.84	2.82
....	.65	.87	1.01	.45	1.35	1.26	4.21	5.13	....

TABLE XX.—*The relation of certain specified diseases to the*

Names of diseases.	Total.	Arms of service.							
		Infantry.	Cavalry.	Artillery.	Ordnance.	Engineers.	Medical Department.	Recruits.	[illegible]
Total rheumatism.									
Admissions:									
Officers	72.14	97.94	68.81	92.78	16.81	4.22	37.04	....	[illegible]
Enlisted men	76.97	76.51	92.79	76.81	120.42	122.08	53.94	37.93	[illegible]
Total	76.74	77.69	91.62	77.83	110.85	102.71	51.32	37.93	[illegible]
Noneffectiveness:									
Officers	5.38	7.26	6.89	4.90	1.75	.02	1.38	....	[illegible]
Enlisted men	3.66	3.77	4.21	3.96	4.28	3.53	2.85	1.98	[illegible]
Total	3.77	3.97	4.34	4.02	4.03	2.95	2.62	1.98	[illegible]
Deaths:									
Enlisted men	.03	....	....	.22	....	....	....	....	....
Total	.02	....	....	.20	....	....	....	....	....
Discharges:									
Enlisted men	1.71	1.87	1.55	2.27	3.90	1.52	1.33	.37	[illegible]
Hernia.									
Admissions:									
Officers	.69	.57	2.29	....	....	....	....	....	....
Enlisted men	2.30	2.65	2.16	2.96	2.56	2.49	.49	1.41	.....
Total	2.20	2.53	2.17	2.77	2.33	2.08	.41	1.41	...
Noneffectiveness:									
Officers	.38	.13	1.63	....	....	....	....	....	..
Enlisted men	.20	.18	.23	.35	.24	.25	.001	.12	..
Total	.21	.18	.30	.32	.21	.21	.001	.12	....
Discharges:									
Enlisted men	1.03	1.16	.96	1.51	....	....	.44	.92	......

arms of the service, and ages of individuals, etc.—Continued.

Ages—years.									
19 and under.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 and over.
....	50.00	32.72	63.27	35.06	103.17	106.68	98.20	99.13	95.65
42.44	61.74	66.20	78.01	89.20	114.83	126.21	195.41	308.98	122.44
42.44	61.61	65.06	77.24	83.95	113.71	123.08	155.29	170.82	103.65
....	1.95	2.68	3.46	2.68	9.57	6.43	7.83	7.34	12.19
2.16	2.88	3.11	3.44	4.27	6.09	6.24	9.62	18.38	4.25
2.16	2.87	3.09	3.44	4.12	6.42	6.27	8.88	11.11	9.81
....	....	.05	....	....	....	....	....	....	18.52
....	....	.04	....	....	....	....	....	....	4.50
.84	.98	1.33	1.47	1.65	3.47	4.09	8.41	25.64	18.52
....	....	....	1.54	1.52	1.98	....	....	....	....
2.77	2.19	2.46	2.37	1.64	2.32	2.41	1.15	16.85	....
2.77	2.16	2.38	2.33	1.63	2.29	2.02	.68	5.76	....
....	....	....	1.97	.33	.29	....	....	....	....
.08	.24	.20	.21	.13	.12	.21	.04	.71	....
.08	.24	.19	.30	.15	.13	.18	.02	.24	....
.84	1.12	.92	1.32	.75	.77	1.26	1.05	....	....

TABLE XXI.—*Showing the relation of certain specified dis*

[Annual rates for the period of

Names of diseases.	Total.	Nativities.				
		American U. S.	Irish.	German.	English.	Cana
Cerebro-spinal fever.						
Admissions:						
Officers	.23	.24	....	....	....	....
Enlisted men	.06	.07	....	....	.39	....
Total	.07	.09	....	....	.38	....
Noneffectiveness:						
Officers	.001	.001	....	....	....	....
Enlisted men	.004	.001	....	....	.09	....
Total	.004	.001	....	....	.09	....
Deaths:						
Officers	.16	.17	....	....	....	....
Enlisted men	.03	.04	....	....	....	....
Total	.04	.06	....	....	....	....
Chicken pox.						
Admissions:						
Enlisted men	.43	.58	.12	....	1.57	....
Total	.40	.53	.11	....	1.54	....
Noneffectiveness:						
Enlisted men	.01	.02	.003	....	.02	....
Total	.01	.02	.003	....	.02	....
Dengue.						
Admissions:						
Officers	.46	1.21	....	....	....	....
Enlisted men	1.04	.94	.58	1.23	2.72	[illegible]
Total	1.00	.90	.57	1.22	2.69	[illegible]
Noneffectiveness:						
Officers	.01	.01	....	....	....	....
Enlisted men	.02	.02	.01	.03	.07	[illegible]
Total	.02	.02	.01	.03	.06	[illegible]
Diphtheria.						
Admissions:						
Officers	.46	.48	....	....	....	....
Enlisted men	.28	.29	.23	.25	....	....
Total	.29	.31	.23	.24	....	....
Noneffectiveness:						
Officers	.01	.01	....	....	....	....
Enlisted men	.01	.01	.01	.002	....	....
Total	.01	.01	.01	.002	....	....
Deaths:						
Enlisted men	.01	....	.11	....	....	....
Total	.01	....	.10	....	....	....
Enteric fever.						
Admissions:						
Officers	3.91	4.12	....	....	....	....
Enlisted men	5.11	4.84	5.21	5.52	4.67	[illegible]
Total	5.06	4.78	5.15	5.50	4.61	[illegible]
Noneffectiveness:						
Officers	1.14	1.20	....	....	....	....
Enlisted men	.76	.70	.80	.89	.68	[illegible]
Total	.78	.74	.79	.89	.67	[illegible]
Deaths:						
Officers	.31	.33	....	....	....	....
Enlisted men	.49	.49	.85	.45	....	....
Total	.47	.47	.83	.45	....	....
Discharges:						
Enlisted men	.03	.04	....	....	....	....
Influenza.						
Admissions:						
Officers	152.32	150.84	88.89	282.05	193.54	[illegible]
Enlisted men	123.03	128.79	124.48	108.74	122.95	[illegible]
Total	124.81	130.80	124.12	109.56	123.80	[illegible]
Noneffectiveness:						
Officers	4.92	4.89	4.26	5.47	5.65	[illegible]
Enlisted men	2.16	2.19	2.45	1.89	2.38	[illegible]
Total	2.33	2.44	2.47	1.90	2.42	[illegible]
Deaths:						
Officers	.31	.33	....	....	....	....
Enlisted men	.43	.40	.95	.34	.71	....
Total	.42	.39	.94	.33	.70	....

natirities and lengths of service in ratios per 1,000 of their mean strength.
years ending December 31, 1892.]

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1.	1 and over.
....	....	....	....	....	....	....	....	.23
....	....	....	....	....	....	....	.15	.04
....	....	....	....	....	....	....	.15	.05
....	....	....	....	....	....	....	....	.001
....	....	....	....	....	....	....	.02	.001
....	....	....	....	....	....	....	.02	.001
....	....	....	....	....	....	....	....	.16
....	....	....	....	....	....	....	.07	.02
....	....	....	....	....	....	....	.07	.03
....	....	....	....	....	....	1.63	1.19	.24
....	....	....	....	....	....	1.62	1.18	.22
....	....	....	....	....	....	.04	.04	.01
....	....	....	....	....	....	.04	.04	.01
....	....	....	....	....	....	....	....	.47
.73	1.67	1.72	1.41	1.55	3.68	....	1.12	1.02
.73	1.63	1.71	1.40	1.54	3.57	....	1.11	.98
....	....	....	....	....	....	....	....	.01
.02	.05	.12	.01	.05	.04	....	.03	.02
.02	.04	.12	.01	.05	.04	....	.03	.02
....	....	....	....	....	....	....	....	.47
....	....	1.72	....	3.09	....	....	.44	.24
....	....	1.71	....	3.08	....	....	.44	.26
....	....	....	....	....	....	....	....	.01
....	....	.10	....	.08	....	....	.01	.01
....	....	.10	....	.08	....	....	.01	.01
....	....	....	....	....	....	....	....	.02
....	....	....	....	....	....	....	....	.02
....	....	....	....	....	....	....	12.20	3.75
8.75	3.34	5.16	4.23	10.82	7.35	3.26	8 23	4.36
8.72	3.27	5.13	4.21	10.77	7.14	3.24	8.26	4.32
....	....	....	....	....	....	....	2.20	1.12
1.10	.58	.78	.51	1.54	.99	.48	1.19	.65
1.09	.56	.78	.50	1.53	.96	.47	1.20	.68
....	....	....	....	....	....	....	....	.32
.67	....	....	....	1.41	....	....	1.42	.25
.66	....	....	....	1.41	....	....	1.41	.26
....	....	....	....	....	....	....	.07	.02
750.00	214.28	250.00	500.00	333.33	125.00	222.22	48.78	154.80
111.52	93.64	99.83	100.00	120.55	121.33	97.07	150.10	116.2
113.37	96.41	100.85	101.13	121.54	121.42	97.97	149.49	119.
36.95	8.80	9.58	9.59	1.82	.68	2.13	1.24	4.
1.76	1.68	2.27	1.44	2.26	1.54	2.00	2.71	2
1.86	1.84	2.82	1.46	2.26	1.52	2.00	2.70	
....	....	....	....	....	....	....	....	
....	....	....	....	....	....	....	.34	
....	....	....	....	....	....	....	.34	

TABLE XXI.—*The relation of certain specified dise*

Names of diseases.	Total.	Nativities.				
		American U.S.	Irish.	German.	English.	Canad
Measles.						
Admissions:						
Officers	1.15	1.21	....	....	....	....
Enlisted men	6.27	9.18	1.04	1.60	1.95	[illegible]
Total	5.95	8.45	1.03	1.59	1.92	[illegible]
Noneffectiveness:						
Officers	.13	.14	....	....	....	....
Enlisted men	.26	.38	.03	.06	.14	[illegible]
Total	.25	.36	.03	.06	.14	[illegible]
Mumps.						
Admissions:						
Officers	1.15	1.21	....	....	....	....
Enlisted men	3.34	4.70	.93	.86	.78	[illegible]
Total	3.21	4.38	.92	.85	.77	[illegible]
Noneffectiveness:						
Officers	.04	.04	....	....	....	....
Enlisted men	.11	.15	.03	.03	.01	[illegible]
Total	.11	.14	.03	.03	.01	[illegible]
Scarlet fever.						
Admissions:						
Officers	.46	.48	....	....	....	....
Enlisted men	.24	.17	.23	.25	.39	....
Total	.25	.20	.23	.24	.38	....
Noneffectiveness:						
Officers	.03	.04	....	....	....	....
Enlisted men	.02	.01	.02	.03	.03	....
Total	.02	.01	.02	.03	.03	....
Small pox.						
Admissions:						
Enlisted men	.10	.15	....	....	....	....
Total	.10	.13	....	....	....	....
Noneffectiveness;						
Enlisted men	.01	.01	....	....	....	....
Total	.01	.01	....	....	....	....
Deaths:						
Enlisted men	.02	.02	....	....	....	....
Total	.02	.02	....	....	....	....
Varioloid.						
Admissions:						
Enlisted men	.03	....	....	.25	....	....
Total	.03	....	....	.24	....	....
Noneffectiveness:						
Enlisted men	.001	....	....	.01	....	....
Total	.001	....	....	.01	....	....
Whooping cough.						
Admissions:						
Enlisted men	.19	.22	.23	.25	....	....
Total	.18	.20	.23	.24	....	....
Noneffectiveness:						
Enlisted men	.01	.01	.01	.01	....	....
Total	.01	.01	.01	.01	....	....
Erysipelas.						
Admissions:						
Officers	1.61	1.69	....	....	....	....
Enlisted men	1.89	1.79	3.01	1.72	1.17	[illegible]
Total	1.87	1.78	2.98	1.71	1.15	[illegible]
Noneffectiveness:						
Officers	.20	.21	....	....	....	....
Enlisted men	.09	.09	.13	.06	.07	
Total	.09	.10	.13	.06	.07	
Deaths:						
Officers	.16	.17	....	....	....	....
Enlisted men	.04	.07	....	....	....	....
Total	.05	.08	....	....	....	....

to nativities and lengths of service, etc.—Continued.

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All others.	Under 1.	1 and over.
......	......	......	......	......	......	......	......	1.17
3.64	......	3.44	1.41	3.09	3.68	1.63	20.76	2.64
3.63	......	3.42	1.40	3.08	3.57	1.62	20.64	2.53
......	......	......	......	......	......	......	......	.13
.09	......	.16	.07	.15	.07	.04	.85	.11
.09	......	.16	.07	.15	.07	.04	.84	.11
......	......	......	......	......	......	......	......	1.17
4.37	......	......	......	1.55	......	.82	8.82	1.97
4.36	......	......	......	1.54	......	.81	8.77	1.91
......	......	......	......	......	......	......	......	.04
.22	......	......	......	.09	......	.02	.28	.07
.21	......	......	......	.09	......	.02	.28	.07
......	......	......	......	......	......	......	......	.47
1.46	......	1.72	......	1.55	......	......	.37	.20
1.45	......	1.71	......	1.54	......	......	.37	.22
......	......	......	......	......	......	......	......	.03
.04	......	.07	......	.06	......	......	.03	.01
.04	......	.07	......	.06	......	......	.03	.01
......	......	......	......	......	......	.82	.22	.07
......	......	......	......	......	......	.81	.22	.07
......	......	......	......	......	......	.03	.03	.01
......	......	......	......	......	......	.02	.03	.004
......	......	......	......	......	......	.75	......	.03
......	......	......	......	......	......	.74	......	.03
......	......	......	......	......	......	......	......	.04
......	......	......	......	......	......	......	......	.03
......	......	......	......	......	......	......	......	.002
......	......	......	......	......	......	......	......	.002
......	......	......	......	......	......	......	.15	.20
......	......	......	......	......	......	......	.15	.19
......	......	......	......	......	......	......	.01	.01
......	......	......	......	......	......	......	.01	.01
......	......	......	......	......	......	......	......	1.64
1.46	3.34	......	2.82	......	3.68	......	1.93	1.87
1.45	3.27	......	2.81	......	3.57	......	1.92	1.86
......	......	......	......	......	......	......	......	.21
.03	.24	......	.12	......	.08	......	.09	.08
.03	.24	......	.12	......	.08	......	.09	.09
......	......	......	......	......	......	......	......	.16
......	......	......	......	......	......	......	.07	.03
......	......	......	......	......	......	......	.07	.05

TABLE XXI.—*The relation of certain specified*

Names of diseases.	Total.	Nativities.				
		American U. S.	Irish.	German.	English.	Cana
Quinsy.						
Admissions:						
Enlisted men	.10	.10	.23	....	.39	......
Total	.10	.09	.23	....	.38	......
Noneffectiveness:						
Enlisted men	.003	.003	.005	....	.003	......
Total	.002	.003	.005	....	.003	......
Deaths:						
Enlisted men	.01	....	.11	....	....	......
Total	.01	....	.10	....	....	......
Tonsillitis.						
Admissions:						
Officers	18.84	19.13	22.22	25.64	....	......
Enlisted men	40.34	42.97	31.24	35.96	42.80	[illegible]
Total	39.03	40.80	31.14	35.91	42.29	[illegible]
Noneffectiveness:						
Officers	.41	.39	1.76	.56	....	......
Enlisted men	.59	.61	.53	.54	.63	
Total	.58	.59	.55	.54	.63	
Other specific febrile and acute infectious diseases.						
Admissions:						
Officers	.46	.48	....	....	....	......
Enlisted men	.25	.39	.12	....	....	......
Total	.26	.40	.11	....	....	......
Noneffectiveness:						
Officers	.01	.01	....	....	....	......
Enlisted men	.004	.01	.001	....	....	......
Total	.004	.01	.001	....	....	......
Bronchitis.						
Admissions:						
Officers	82.25	78.93	177.78	205.13	64.52	[illegible]
Enlisted men	83.47	89.23	83.99	62.59	87.16	[illegible]
Total	83.39	88.30	84.96	63.27	86.89	[illegible]
Noneffectiveness:						
Officers	3.07	2.55	17.15	29.69	.71	
Enlisted men	1.45	1.52	1.54	.99	1.53	
Total	1.55	1.61	1.70	1.12	1.52	
Deaths:						
Enlisted men	.03	.02	.11	....	....	......
Total	.02	.02	.10	....	....	......
Discharges:						
Enlisted men	.18	.18	....	.22	.71	......
Pulmonary phthisis.						
Admissions:						
Officers	2.07	2.18	....	....	....	......
Enlisted men	3.62	4.04	3.35	2.09	2.33	
Total	3.53	3.87	3.32	2.08	2.31	
Noneffectiveness:						
Officers	1.01	1.07	....	....	....	......
Enlisted men	.86	.91	1.04	.57	.42	
Total	.87	.92	1.03	.57	.41	
Deaths:						
Officers	.63	.66	....	....	....	......
Enlisted men	.62	.71	.53	.34	1.07	
Total	.62	.70	.52	.33	1.05	
Discharges:						
Enlisted men	1.86	2.01	1.90	1.23	.36	
Pneumonia and results.						
Admissions:						
Officers	2.07	2.18	....	....	....	......
Enlisted men	3.99	4.62	2.55	3.68	2.72	
Total	3.88	4.40	2.52	3.66	2.69	
Noneffectiveness:						
Officers	.19	.20	....	....	....	......
Enlisted men	.38	.46	.23	.34	.14	
Total	.37	.43	.23	.34	.14	

o nativities and lengths of service, etc.—Continued.

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All others.	Under 1.	1 and over.
....	....	....	....	....	....	....	.07	.11
....	....	....	....	....	....	....	.07	.10
....	....	....	....	....	....	....	.001	.003
....	....	....	....	....	....	....	.001	.003
....	....	....	....	....	....	....	....	.02
....	....	....	....	....	....	....	....	.02
....	....	....	....	....	....	....	....	19.20
55.39	30.10	43.03	32.39	43.28	36.77	25.29	61.04	35.15
55.24	29.41	42.74	32.30	43.08	35.72	25.10	60.67	33.99
....	....	....	....	....	....	....	....	.42
.87	.34	.55	.46	.55	.46	.35	.94	.50
.87	.34	.55	.46	.54	.45	.35	.93	.50
....	....	....	....	....	....	....	....	.47
....	....	....	....	....	....	....	.52	.16
....	....	....	....	....	....	....	.52	.21
....	....	....	....	....	....	....	....	.01
....	....	....	....	....	....	....	.01	.003
....	....	....	....	....	....	....	.01	.004
....	142.85	....	....	....	125.00	222.22	48.78	82.89
74.35	90.30	58.52	46.48	63.37	95.59	69.83	100.77	79.12
74.13	91.50	58.12	46.35	63.07	96.43	70.44	100.46	79.41
....	3.52	....	....	....	4.79	3.65	.67	2.12
1.61	3.57	1.01	.78	1.18	1.34	1.23	1.74	1.38
1.60	3.56	1.00	.78	1.18	1.44	1.25	1.73	1.51
....	....	....	....	....	....	....	....	.03
....	....	....	....	....	....	....	....	.03
.67	....	....	....	....	....	....	.07	.20
....	....	....	....	....	....	....	....	2.11
6.56	6.69	5.16	....	....	7.35	.82	4.97	3.29
6.54	6.54	5.13	....	....	7.14	.81	4.94	3.20
....	....	....	....	....	....	....	....	1.08
1.90	.56	1.53	....	....	2.87	.02	.89	.85
1.89	.55	1.52	....	....	2.79	.02	.88	.86
....	....	....	....	....	....	....	....	.64
1.34	....	....	....	....	....	....	.75	.59
1.33	....	....	....	....	....	....	.74	.62
4.00	6.11	1.58	....	....	....	....	2.51	1.70
....	....	....	....	....	....	....	....	2.11
4.37	3.34	3.44	1.41	3.09	....	2.45	5.64	3.58
4.36	3.27	3.42	1.40	3.08	....	2.43	5.60	3.47
....	....	....	....	....	....	....	....	.19
.26	.42	.31	.20	.16	....	.31	.54	.34
.26	.41	.31	.20	.16	....	.31	.54	.33

TABLE XXI.—*The relation of certain specified*

Names of diseases.	Total.	Nativities.				
		American U. S.	Irish.	German.	English.	Canadian
Pneumonia and results—Cont.						
Deaths:						
Officers	.79	.83	......	......	......	......
Enlisted men	.62	.55	.74	.67	1.07	
Total	.64	.59	.73	.70	1.05	
Discharges:						
Enlisted men	.01	.02	......	......	......	......
Pleuritis and results.						
Admissions:						
Officers	2.07	1.94	11.11	......	......	......
Enlisted men	2.29	2.32	3.12	1.23	2.33	
Total	2.15	2.29	3.21	1.22	2.31	
Noneffectiveness:						
Officers	.29	.27	1.43	......	......	......
Enlisted men	.13	.14	.11	.10	.08	
Total	.13	.15	.12	.10	.08	
Deaths:						
Enlisted men	.05	.07	.11	......	......	......
Total	.05	.06	.10	......	......	......
Discharges:						
Enlisted men	.07	.07	......	.11	......	
Rheumatic fever.						
Admissions:						
Officers	4.59	4.36	11.11	......	......	
Enlisted men	5.33	5.54	4.40	5.28	3.50	
Total	5.28	5.44	4.47	5.25	3.46	
Noneffectiveness:						
Officers	.65	.66	.61	......	......	
Enlisted men	.57	.60	.49	.62	.37	
Total	.57	.60	.49	.62	.37	
Deaths:						
Enlisted men	.03	......	.11	.11	......	......
Total	.02	......	.10	.11	......	......
Discharges:						
Enlisted men	.07	.07	......	.11	......	......
Myalgia and muscular rheumatism.						
Admissions:						
Officers	47.32	45.52	111.11	25.64	64.52	
Enlisted men	52.57	53.69	54.26	52.04	45.53	
Total	52.25	52.95	54.85	51.91	45.75	
Noneffectiveness:						
Officers	2.55	2.40	6.08	.98	16.51	
Enlisted men	1.73	1,75	2.01	1.67	1.23	
Total	1.78	1.81	2.05	1.66	1.41	
Discharges:						
Enlisted men	.76	.64	.95	1.23	......	
Other rheumatisms.						
Admissions:						
Officers	20.22	19.61	66.67	......	32.26	......
Enlisted men	19.14	19.78	21.52	19.27	12.84	
Total	19.20	19.76	21.98	19.18	13.07	
Noneffectiveness:						
Officers	2.17	1.97	11.34	......	10.24	......
Enlisted men	1.37	1.45	1.51	1.30	.73	
Total	1.41	1.50	1.61	1.29	.85	
Discharges:						
Enlisted men	.88	.86	1.06	.90	1.07	......
Total rheumatism.						
Admissions:						
Officers	72.14	69.49	188.89	25.64	96.78	
Enlisted men	76.97	79.01	80.17	76.58	61.87	
Total	76.74	78.15	81.29	76.34	62.29	
Noneffectiveness:						
Officers	5.38	5.02	18.04	.98	26.75	
Enlisted men	3.66	3.80	4.00	3.59	2.34	
Total	3.77	3.91	4.15	3.58	2.63	

to nativities and lengths of service, etc.—Continued.

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1.	1 and over.
....	....	....	....	....	....	....	....	.80
2.60	....	....	....	1.41	....	....	.81	.58
1.99	....	....	....	1.40	....	....	.81	.60
....	....	....	....	....	....	....	....	.02
....	....	....	....	....	....	....	....	2.11
.73	1.67	....	4.23	....	....	....	1.78	2.25
.73	1.63	....	4.21	....	....	....	1.77	2.24
....	....	....	....	....	....	....	....	.29
.07	.03	....	.45	....	....	....	.15	.12
.07	.03	....	.45	....	....	....	.15	.13
....	....	....	....	....	....	....	.14	.03
....	....	....	....	....	....	....	.13	.03
....	....	....	....	....	....	....	.20	.03
....	....	....	....	....	....	....	12.20	4.45
9.48	3.34	10.33	2.82	6.18	3.68	4.08	7.79	4.71
9.45	3.27	10.26	2.81	6.15	3.57	4.05	7.81	4.70
....	....	....	....	....	....	....	.27	.66
.89	.30	.42	.09	.50	.11	.33	.87	.49
.88	.29	.42	.09	.49	.11	.33	.81	.50
....	....	....	....	....	....	....	....	.03
....	....	....	....	....	....	....	....	.03
.67	....	....	....	....	....	....	.20	.03
....	142.85	250.00	....	....	125.00	....	12.20	48.00
39.36	36.79	53.36	49.29	44.82	36.77	52.20	41,53	55.33
39.25	39.22	54.70	49.16	44.61	39.29	51.82	41.35	54.80
....	3.72	2.74	....	....	3.08	....	.37	2.50
1.89	.83	2.79	1.37	1.19	.49	1.18	1.14	1.88
1.88	.89	2.79	1.37	1.19	.57	1.17	1.14	1.93
.67	....	....	....	2.82	....	.75	.34	.87
....	....	....	....	....	....	....	....	20.60
16.04	8.36	22.37	23.94	15.56	7.35	8.16	16.17	19.88
15.99	8.17	22.22	23.87	15.38	7.14	8.10	16.07	19.94
....	....	....	....	....	....	....	....	2.22
1.01	.12	2.74	2.53	.53	.06	.27	1.15	1.42
1.00	.12	2.72	2.53	.53	.06	.27	1.14	1.48
.67	....	1.57	3.86	....	....	....	.81	.90
....	142.85	250.00	....	....	125.00	....	24.39	73.05
64.87	48.50	86.06	76.06	66.46	47.79	64.44	65.49	79.92
64.68	50.65	87.18	75.84	66.15	50.00	63.97	65.24	79.43
....	3.72	2.74	....	....	3.08	....	.63	5.47
3.78	1.25	5.96	3.99	2.22	.66	1.79	3.17	3.78
3.77	1.30	5.93	3.98	2.21	.73	1.78	3.15	3 91

TABLE XXI.—*The relation of certain specified dise*

Names of diseases.	Nativities.					
	Total.	American U. S.	Irish.	German.	English.	Canadian
Total rheumatism—Continued.						
Deaths:						
Enlisted men	.03	....	.11	.11	....	....
Total	.02	....	.10	.11	....	....
Discharges:						
Enlisted men	1.71	1.57	2.01	2.24	1.07	[illegible]
Hernia.						
Admissions:						
Officers	.69	.73	....	....	....	....
Enlisted men	2.30	2.52	1.50	2.58	2.33	[illegible]
Total	2.20	2.35	1.49	2.56	2.31	[illegible]
Noneffectiveness:						
Officers	.38	.40	....	....	....	....
Enlisted men	.20	.21	.17	.18	.32	[illegible]
Total	.21	.23	.17	.18	.32	[illegible]
Discharges:						
Enlisted men	1.03	1.04	.95	.79	1.07	[illegible]

to nativities and lengths of service, etc.—Continued.

Nativities.							Length of service—years.	
Scandinavian.	Scotch.	Swiss.	Austrian.	Danish.	French.	All other.	Under 1	1 and over.
....	....	....	....	....	....	....	....	.03
....	....	....	....	....	....	....	....	.03
2.00	....	1.57	3.86	2.82	....	.75	1.36	1.80
....	....	....	....	....	....	....	....	.70
1.46	....	....	....	3.09	....	3.26	2.52	2.25
1.45	....	....	....	3.08	....	3.24	2.51	2.13
....	....	....	....	....	....	....	....	.38
.08	....	.01	....	.07	....	.42	.22	.19
.08	....	.01	....	.07	....	.41	.22	.21
.67	....	1.57	....	2.82	3.37	2.24	1.49	.92

TABLE XXII.—*Number of applicants for enlistment examined during the year the number accepted, rejected on primary examination, and declined, and thousand.*

	White.		Colored.		Indians.*		Total
	Number.	Ratios per 1,000 white examined.	Number.	Ratios per 1,000 colored examined.	Number.	Ratios per 1,000 Indians examined.	Number.
Examined	22,692	1,000	2,107	1,000	213	1,000	25,012
Accepted	8,555	377	833	395	197	925	9,585
Rejected	13,366	589	1,201	570	15	70	14,582
Declined	771	34	73	35	1	5	845

*Including only applicants for enlistment as soldiers for the regular term of five years. In to these, 179 Indian applicants for enlistment as scouts were examined, of whom 177 were and 2 were rejected.

TABLE XXIII.—*Causes of rejection among 25,012 recruits examined during the year with corresponding ratios per 1,000 of each race examined.*

Number examined	White, 22,692.				Colored, 2,107.		
Causes of rejection.	Rejected on primary examination.	Rejected on secondary examination.	Total.	Ratios per 1,000.	Rejected on primary examination.	Rejected on secondary examination.	Total.
Malarial diseases	4	....	4	.18	....	....	....
Enthetic diseases	322	13	335	14.76	101	2	103
Dietic diseases	348	....	348	15.33	7	....	7
Constitutional diseases	22	1	23	1.01	5	....	5
Developmental diseases	994	15	1,009	44.46	96	2	98
Parasitic diseases	17	....	17	.75	4	....	4
Diseases of the nervous system	56	14	70	3.08	14	2	16
Diseases of the eye	1,985	18	2,003	88.27	136	....	136
Diseases of the ear	203	11	214	9.43	3	1	4
Diseases of the nose	3	....	3	.13	....	....	....
Diseases of the respiratory system	47	3	50	2.20	3	....	3
Diseases of the circulatory system	519	33	552	24.33	48	....	48
Diseases of the digestive system	745	25	770	33.93	63	4	67
Diseases of the lymphatic system	8	....	8	.35	2	....	2
Diseases of the genito-urinary system	905	24	929	40.94	59	....	59
Diseases of the locomotor system	409	7	416	18.33	63	....	63
Diseases of the integumentary system	124	5	129	5.68	7	1	8
Results of injuries	132	9	141	6.21	17	....	17
Over age	516	....	516	22.74	38	....	38
Under age	98	....	98	4.32	23	....	23
Minority	749	43	792	34.90	46	1	47
Over height	20	....	20	.88	10	....	10
Under height	164	....	164	7.23	20	....	20
Over weight and obesity	100	....	100	4.41	9	....	9
Under weight	756	1	757	33.36	18	....	18
Under size	469	2	471	20.76	48	....	48
Illiteracy	18	....	18	.79	3	....	3
Imperfect knowledge of English	530	1	531	23.40	10	....	10
Married, or having dependent relatives	219	12	231	10.18	45	3	48
Discharged for disability or by order	15	24	39	1.72	....	4	4
Deserters and ex-convicts	27	21	48	2.12	2	3	5
Moral depravity	150	1	151	6.65	8	....	8
Character bad and doubtful	235	9	244	10.75	16	1	17
General unfitness and unclassified	2,457	4	2,461	108.45	277	2	279
Aggregate	13,366	296	13,662	602,06	1,201	26	1,227

TABLE XXIII.—*Causes of rejection among 25,012 recruits examined during the year 1892, with corresponding ratios per 1,000 of each race examined*—Continued.

Number examined	Indian, 213.				Total, 25,012.			
Causes of rejection.	Rejected on primary examination.	Rejected on secondary examination.	Total.	Ratios per 1,000.	Rejected on primary examination.	Rejected on secondary examination.	Total.	Ratios per 1,000.
Malarial diseases					4		4	.16
Enthetic diseases	4		4	18.78	427	15	442	17.67
Dietic diseases					355		355	14.19
Constitutional diseases					27	1	28	1.12
Developmental diseases	1		1	4.69	1,091	17	1,108	44.30
Parasitic diseases					21		21	.84
Diseases of the nervous system					70	16	86	3.44
Diseases of the eye	1		1	4.69	2,122	18	2,140	85.55
Diseases of the ear					206	12	218	8.72
Diseases of the nose					3		3	.12
Diseases of the respiratory system	3		3	14.08	53	3	56	2.24
Diseases of the circulatory system	1		1	4.69	568	33	601	24.03
Diseases of the digestive system	1		1	4.69	809	29	838	33.50
Diseases of the lymphatic system					10		10	.40
Diseases of the genito-urinary system					964	24	988	39.50
Diseases of the locomotor system	1		1	4.69	473	7	480	19.19
Diseases of the integumentary system					131	6	137	5.48
Results of injuries	1		1	4.69	150	9	159	6.36
Over age					554		554	22.15
Under age					121		121	4.84
Minority					795	44	839	33.54
Over height					30		30	1.20
Under height					184		184	7.36
Over weight and obesity					109		109	4.36
Under weight					774	1	775	30.98
Under size					517	2	519	20.75
Illiteracy					21		21	.84
Imperfect knowledge of English					540	1	541	21.63
Married, or having dependent relatives					264	15	279	11.15
Discharged for disability or by order					15	28	43	1.72
Deserters and ex-convicts					29	24	53	2.12
Moral depravity					158	1	159	6.36
Character bad and doubtful					251	10	261	10.43
General unfitness and unclassified	2		2	9.39	2,736	6	2,742	109.63
Aggregate	15		15	70.42	14,582	322	14,904	595.87

TABLE XXIV.—*Nativity of recruits accepted during the year 1892, with ratios per thousand accepted.*

Nativity.	White.		Colored.		Indian.		Total.	
	Number.	Ratios per 1,000 accepted.	Number.	Ratios per 1,000 accepted.	Number.	Ratios per 1,000 accepted.	Number.	Ratios per 1,000 accepted.
United States	5,523	576.21	823	85.86	197	20.55	6,543	682.63
England	300	31.30					300	31.30
Scotland	53	5.54					53	5.54
Wales	9	.94					9	.94
Ireland	897	93.58					897	93.58
Canada	215	22.43	3	.31			218	22.74
Other British possessions	8	.83					8	.83
France	21	2.19					21	2.19
Belgium	8	.83					8	.83
Holland	11	1.15					11	1.15
Denmark	96	10.02					96	10.02
Norway and Iceland	67	6.99					67	6.99
Sweden	153	15.96					153	15.96
Germany	880	91.81					880	91.81
Switzerland	72	7.51					72	7.51
Austria	80	8.35					80	8.35
Bohemia	15	1.56					15	1.56
Hungary	19	1.98					19	1.98
Poland	22	2.30					22	2.30
Russia	71	7.41					71	7.41
Italy	19	1.98					19	1.98
Other countries	16	1.67	7	.73			23	2.40
Total	8,555	892.54	833	86.91	197	20.55	9,585	1,000.00

TABLE XXV.—*Average height, weight and chest measure of 9,585 recruits*

Age.	Whole number examined.				Average height (in inches).			
	White.	Colored.	Indian.	Total.	White.	Colored.	Indian.	Total.
16	24	1	3	28	66.06	65.75	64.42	65.85
17	27	2	9	38	66.33	66.88	67.19	66.56
18	250	11	12	273	67.15	66.86	67.42	67.15
19	199	13	16	228	67.38	66.81	68.69	67.44
Under 20 (average 18.2)	500	27	40	567	67.14	66.80	67.65	67.16
20	209	13	8	230	67.62	66.40	67.69	67.55
21	1,888	163	39	2,090	67.43	67.14	68.71	67.44
22	986	91	22	1,099	67.61	67.14	68.10	67.58
23	699	66	14	779	67.63	67.56	68.65	67.64
24	623	49	10	682	67.61	67.17	69.45	67.61
20 to 24 (average 21.9)	4,405	382	93	4,880	67.54	67.19	68.55	67.53
25	543	49	10	602	67.44	67.14	67.35	67.41
26	579	80	7	666	67.38	67.33	69.89	67.40
27	459	46	7	512	67.36	67.88	68.21	67.42
28	360	35	15	410	67.43	67.09	68.55	67.44
29	309	21	7	337	67.28	67.71	68.57	67.34
25 to 29 (average 26.7)	2,250	231	46	2,527	67.38	67.39	68.45	67.41
30	126	15	7	148	67.75	67:83	67.00	67.72
31	190	31	1	222	67.51	67.05	69.75	67.45
32	142	18	2	162	66.98	66.58	69.88	66.97
33	144	13	2	159	67.29	68.29	69.63	67.40
34	84	15	......	99	67.04	68.14	....	67.22
30 to 34 (average 31.8)	686	92	12	790	67.34	67.44	68.15	67.36
35	72	11	3	86	66.92	66.16	68.13	66.86
36	67	10	......	77	66.96	67.58	....	67.04
37	60	9	1	70	67.33	67.40	68.00	67.34
38	54	8	1	63	67.30	66.41	68.00	67.20
39	48	4	......	52	66.76	67.38	....	66.80
35 to 39 (average 36.8)	301	42	5	348	67.05	66.93	68.02	67.05
40 to 49 (average 43 ?)	369	54	1	424	67.12	67.39	66.75	67.16
50 and over (average 51 ?)	44	5	......	49	67.01	67.50	....	67.06
Average 25.39	8,555	833	197	9,585	67.42	67.26	68.30	67.43

accepted during the year 1892 (white, 8,555; colored, 833; Indian, 197).

Average weight (in pounds).				Average chest measure (in inches).							
				White.		Colored.		Indian.		Total.	
White.	Colored.	Indian.	Total.	Expiration.	Inspiration.	Expiration.	Inspiration.	Expiration.	Inspiration.	Expiration.	Inspiration.
128.54	131.00	134.33	129.25	31.97	34.71	30.50	32.50	30.58	33.00	31.77	34.45
129.22	132.50	138.75	131.46	31.96	34.68	33.50	36.50	31.81	34.56	32.01	34.75
135.71	139.36	136.25	135.89	32.79	35.65	32.98	36.48	32.06	35.52	32.76	35.64
139.11	137.92	139.19	139.05	33.40	36.29	33.13	35.77	32.42	35.31	33.31	36.19
136.37	137.85	137.82	136.54	32.95	35.81	33.00	35.58	32.04	35.04	32.89	35.74
138.99	138.31	139.00	138.95	33.29	36.13	33.65	35.90	32.91	36.41	33.30	36.13
142.09	144.90	143.05	142.33	33.78	36.64	33.94	36.50	33.51	36.78	33.79	36.63
145.24	146.02	144.59	145.29	34.21	37.07	34.06	36.53	33.80	36.93	34.19	37.02
145.99	148.26	150.36	146.26	34.31	37.19	34.36	36.90	34.43	37.64	34.31	37.18
146.28	149.10	152.80	146.58	34.30	37.21	34.49	37.13	33.60	36.93	34.30	37.20
143.86	146.06	145.28	144.06	34.01	36.88	34.10	36.64	33.67	36.93	34.01	36.86
146.38	146.96	145.10	146.40	34.31	37.26	33.93	36.49	33.18	36.80	34.26	37.19
146.18	150.85	156.29	146.85	34.43	37.29	34.30	36.91	35.25	38.04	34.42	37.26
146.70	153.24	149.14	147.32	34.46	37.40	34.42	36.93	34.82	37.71	34.46	37.36
146.32	145.97	156.73	146.68	34.41	37.32	34.04	36.60	34.65	38.05	34.39	37.28
146.44	146.43	151.86	146.55	34.50	37.40	33.70	36.88	34.32	38.00	34.45	37.38
146.39	149.36	152.24	146.77	34.42	37.32	34.15	36.78	34.40	37.72	34.39	37.28
150.24	155.27	146.43	150.57	34.60	37.62	33.97	36.78	34.07	36.75	34.51	37.49
150.85	148.97	140.00	150.54	34.60	37.59	34.24	36.81	34.50	37.00	34.55	37.48
145.96	144.67	152.00	145.89	34.49	37.72	33.69	36.71	35.50	38.00	34.41	37.61
150.98	160.77	161.50	151.91	34.88	37.73	34.79	37.44	36.75	39.50	34.90	37.73
147.85	155.60	....	149.02	34.49	37.41	34.62	37.07	....	....	34.51	37.36
149.38	151.90	149.33	149.68	34.62	37.63	34.23	36.92	34.79	37.44	34.58	37.54
144.21	147.55	154.00	144.98	34.17	37.03	33.30	35.68	35.00	37.83	34.09	36.89
151.01	149.90	....	150.87	34.82	37.74	33.98	36.50	....	....	34.71	37.58
152.38	147.67	147.00	151.70	34.71	37.60	33.44	35.89	35.50	37.50	34.56	37.38
151.96	147.75	165.00	151.63	34.88	37.70	33.72	36.34	35.75	37.75	34.75	37.53
151.71	147.50	....	151.38	34.96	37.77	33.88	36.38	....	....	34.88	37.66
149.94	148.17	154.80	149.80	34.68	37.54	33.63	36.11	35.25	37.75	34 56	37.37
150.19	154.93	167.00	150.83	34.92	37.78	34.83	37.36	35.00	38.00	34.91	37.73
152.95	152.80	....	152.94	35.16	37.64	35.00	37.50	....	....	35.15	37.62
145.07	148.08	146.04	145.35	34.17	37.06	34.12	36.70	33.64	36.80	34.16	37.02

TABLE XXVI.—*Occupations of 9,585 recruits accepted during the year 1892.*

Occupation.	White.	Colored.	Indian.	Total.
Professional and commercial:				
Physician	1			1
Chemists	2			2
Druggists	39			39
Nurses	8			8
Dentists	3			3
Lawyers	7			7
Insurance agents	3			3
Real estate agent	1			1
Auctioneer	1			1
Newspaper men	6			6
Civil engineers and surveyors	8			8
Assayer	1			1
Actors	2			2
Property man	1			1
Artists	2			2
Draftsmen	4			4
Stenographers	7			7
Typewriters	2			2
Bookkeepers	52			52
Hotel clerks	3			3
Shipping clerk	1			1
Clerks	373	3	1	377
Musicians	202	11	1	214
Music teacher	1			1
Piano tuners	2			2
Salesmen and commercial drummers	36	3		39
Canvassers	3			3
Agents	4			4
Storekeeper	1			1
School teachers	57	5		62
Students and school boys	23		3	26
Photographers	12	1		13
Cotton tester	1			1
Interpreter			1	1
Catechist			1	1
Dealers and workers in food products:				
Butchers	103	1		104
Bakers	87	4		91
Cooks	84	24		108
Confectioners	9			9
Dairymen	7	1		8
Millers	9			9
Grocers	4			4
Oysterman	1			1
Fisherman	1			1
Iceman	1			1
Workers in liquors and tobacco:				
Brewers	4			4
Bottlers	3			3
Bartenders	7			7
Cigar makers	19			19
Tobacco stripper	1			1
Workers in cloth and clothing:				
Weavers	30			30
Spinners	14			14
Card grinders	4			4
Knitter	1			1
Shearsman	1			1
Loom fixer	1			1
Velvet finisher	1			1
Dyers	3			3
Tailors	80	1	5	86
Underwear cutter	1			1
Collar and cuff makers	3			3
Stocking dresser	1			1
Hatters	9			9
Furrier	1			1
Workers in leather:				
Tanners	3			3
Curriers	2	1		3
Morocco polishers	3			3
Shoemakers	73		1	74
Last makers	2			2
Saddlers	14	1		15
Harness makers	15		1	16
Whip maker	1			1
Building trades:				
Brickmakers	7	1		8
Bricklayers	23	3		26
Stonecutters	27			27
Stone polishers	4			4

TABLE XXVI.—*Occupations of 9,585 recruits accepted during the year 1892.*—Continued.

Occupation.	White.	Colored.	Indian.	Total.
Building trades—Continued.				
Stone masons	15			15
Masons	8			8
Carpenters	194	6	4	204
Lathers	5	1		6
Plasterers	7	1		8
Glaziers	2			2
Painters	182	4		186
Decorator	1			1
Paper hangers	8			8
Roofers	3			3
Galvanizer	1			1
Plumbers	35			35
Gas-fitters	7	1		8
Pipe-fitters	2			2
Steam-fitters	11			11
Furnaceman	1			1
Tiler	1			1
Fence maker	1			1
Fireproof worker	1			1
Cement finisher	1			1
Carriage and wagon makers	7			7
Wheelwrights	2			2
Carriage painters	3			3
Car builders	2			2
Ship carpenter	1			1
Spar maker	1			1
Bridge builders	5			5
Electricity and transportation:				
Electricians	7			7
Electric machinist	1			1
Telegraphers	30			30
Linemen	6			6
Motormen	2			2
Gripman	1			1
Car drivers	4			4
Conductors	8			8
Engineers (including stationary engineers)	72	3		75
Firemen	53	5		58
Brakemen	61			61
Oiler	1			1
Switch and yard men	5			5
Car inspector	1			1
Train dispatcher	1			1
Railroaders	32	5		37
Railroad clerk	1			1
Mail clerk and mail carrier	1	1		2
Express agent	1			1
Pipe liners	2			2
Printing trades:				
Printers and compositors	91	3	1	95
Lithographers	3			3
Electrotyper	1			1
Pressmen	5	1		6
Bookbinders	5			5
Paper-makers	11			11
Jewelry:				
Jewellers	5			5
Watchmakers	8			8
Watch-case turner	1			1
Clock repairer	1			1
Pearl worker	1			1
Engraver	1			1
Silver platers	2			2
Silver polisher	1			1
Mines, metals, and machinery:				
Quarrymen	3			3
Miners	72	5		77
Puddlers	15	11		26
Molders	39			39
Iron workers	25			25
Core makers	2			2
Brass workers	2			2
Brass finishers	7			7
Foundryman	1			1
Steel blower	1			1
Steel heaters	2			2
Boiler makers	11			11
Riveter	1			1
Stove maker	1			1
Stove mounters	2			2

TABLE XXVI.—*Occupations of 9,585 recruits accepted during the year 1892*—Continued

Occupations.	White.	Colored.	Indian.	Total.
Mines, metals, and machinery—Continued.				
Tube worker	1			1
Nail maker	1			1
Screw maker	1			1
Chain maker	1			1
Wire drawers and workers	6			6
Nickel plater	1			1
Nickel polisher	1			1
Drillers	2			2
Machinists	105	1		106
Ax maker	1			1
Cutler	1			1
Tool grinders	3			3
File cutters	2			2
Filers	3			3
Tinners	18			18
Tinsmiths	18			18
Locksmiths	11			11
Key maker	1			1
Bell makers	2			2
Gunsmiths	2			2
Housesmith	1			1
Blacksmiths (*see also* Farriers)	86	7	3	96
Workers with horses:				
Veterinary surgeon	1			1
Farriers (*see* Blacksmiths)	15	1		16
Horse trainers	2	1		3
Liverymen	2			2
Jockeys	2			2
Hostlers and grooms	75	17		92
Teamsters, drivers, and coachmen	342	34		376
Horsemen	2			2
Riding teacher	1			1
Horse raiser			1	1
Agriculture and stock raising:				
Farmers	1,058	63	67	1,188
Gardeners	22			22
Florists	11	1		12
Ranchmen	3			3
Cowboys	3		2	5
Herders			1	1
Stockmen			4	4
Personal service and attendance:				
Barbers	66	10		76
Waiters	43	20		63
Stewards	3			3
Butlers	2			2
Valet	1			1
Servant	1			1
Laundryman	1			1
Elevator service	1			1
Unskilled laborers:				
Laborers	1,953	274	13	2,240
Porters	20	9		29
Longshoreman	1			1
Makers of furniture and other workers in wood:				
Cabinet-makers	14			14
Chair maker	1			1
Chair caner	1			1
Upholsterers	10	1		11
Broom makers	5			5
Brush makers	2			2
Basket makers	2			2
Mattress maker	1			1
Frame makers	3			3
Oilcloth printer	1			1
Carpet-layer	1			1
Sawyers	5			5
Turners	4			4
Wood polishers	6			6
Varnishers and finishers	4			4
Japanner	1			1
Lacquerer	1			1
Wood carver	1			1
Woodworkers	6			6
Wood moulder	1			1
Coopers	15		1	16
Lumbermen and loggers	11			11
Turpentine worker	1			1
Lumber inspectors	2			2

TABLE XXVI.—*Occupations of 9,585 recruits accepted during the year 1892*—Continued.

Occupations.	White.	Colored.	Indian.	Total.
Soldiers and sailors:				
Sailmaker	1			1
Sailors	64	5		69
Soldiers	1,770	282		2,052
Scouts			6	6
Indian police			2	2
Unclassified:				
Glass-blowers	3			3
Glass-beveler	1			1
Undertakers	2			2
Coffin maker	1			1
Box makers	5			5
Box cutter	1			1
Bag maker	1			1
Rubber workers	2			2
Sign painter	1			1
Rule makers	2			2
Powder maker	1			1
Pencil polisher	1			1
Polishers	7			7
Finishers	2			2
Packers	5			5
Watchman	1			1
Messengers	4			4
Sprinter	1			1
Carriage washer	1			1
Mill hands	6			6
Paver	1			1
Sand buffers	3			3
House mover	1			1
Pipe layer	1			1
Billposter	1			1
Trunk makers	2			2
Mechanics	6			6
Apprentice	1			1
No occupation given	8		78	86
Total	8,555	833	197	9,585

REPORT

OF THE

SURGEON-GENERAL OF THE ARMY

TO THE

SECRETARY OF WAR

FOR THE

FISCAL YEAR ENDING JUNE 30, 1894.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1894.

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REPORT

OF

THE SURGEON-GENERAL.

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
Washington, D. C., September 20, 1894.

SIR: I have the honor to submit herewith a statement of disbursements made during the fiscal year ended June 30, 1894, from the appropriation made by act of Congress approved February 27, 1893, for the support of the Medical Department of the Army and the balance on hand at the close of said fiscal year, viz:

Medical and Hospital Department, 1894:		
Appropriated by act approved February 27, 1893		$185,500.00
Refunded during the year		52.26
Total to be accounted for		185,552.26
Disbursed during the year:		
For medical and hospital supplies	$46.670.44	
For pay of employès	33,877.39	
For expenses of supply depots	163.47	
For medical attendance and medicines	14,019.91	
For washing at post hospitals	2,186.17	
For advertising	32.40	
For miscellaneous expenses	101.85	
For material for experimental cooking	448.10	
		97,499.73
Balance to be accounted for July 1, 1894		88,052.53
Balance in U. S. Treasury	49,357.97	
In hands of disbursing officers:		
New York	20,847.87	
St. Louis	12,852.33	
San Francisco	3,632.18	
Washington	1,349.39	
Army and Navy General Hospital	12.79	
		88,052.53

Of the balance remaining on hand July 1 a considerable portion has already been or will be expended in payment for supplies contracted for and for other obligations incurred prior to July 1, 1894. But after paying these obligations a balance of about $5,000 will remain, which will revert to the Treasury. I trust that this saving from the appropriation made by Congress will be taken as evidence of economical administration, and of my desire to keep the expenditures for the Medical Department of the Army within as reasonable limits as practicable without impairing the efficiency of the services rendered by it.

The approximate value of the medical and hospital supplies actually issued during the fiscal year ended June 30, 1894, was $120,000.

I also respectfully submit a statement showing the expenditures during the last fiscal year from the appropriations for the Medical Department for prior fiscal years, and the balances on hand June 30, 1894:

Medical and Hospital Department, 1893:		
Balance on hand July 1, 1893		$65,680.37
Refunded during the year		389.04
Total to be accounted for		66,069.41
Disbursed during the year:		
For medical and hospital supplies	$62,332.55	
For pay of employés	100.00	
For expenses of supply depots	2.02	
For medical attendance and medicines	997.55	
For washing for post hospitals	223.82	
For miscellaneous expenses	3.00	
		63,658.94
Balance on hand June 30, 1894		2,410.47

In addition to the sum of $997.55 expended for medical attendance and medicines, there were also approved at this office and forwarded to the Paymaster-General of the Army vouchers for such services amounting to $1,929.44 for payment from the appropriation made by act approved July 16, 1892, viz: "For pay for medical services at posts where there are no medical officers." The amount disbursed for medical services rendered by civilian physicians during the fiscal year 1893, reported in my last annual report, was $16,537.40. Adding to this amount the two sums above reported as expended for medical attendance during the fiscal year 1893, viz, $997.55 and $1,929.44, it will be seen that the grand total paid so far for medical attendance rendered by civilian physicians during the said fiscal year 1893 amounts to $19,464.39; and it is estimated that accounts for such services amounting to $250 will still be presented for payment.

Medical and Hospital Department, 1892:		
Balance on hand July 1, 1893		$6,683.55
Disbursed during the year	$6,586.06	
Carried to the surplus fund	97.49	
		6,683.55
Contingencies, headquarters military departments, 1894:		
Appropriated by act approved February 27, 1893—		
Allotment for the Medical Department		400.00
Disbursed during the year		273.59
Balance on hand June 30, 1894		126.41
Library of the Surgeon-General's Office, 1893:		
Balance on hand July 1, 1893		13.21
Disbursed during the year		13.21
Library of the Surgeon-General's Office, 1894:		
Appropriated by act approved February 27, 1893		7,000.00
Disbursed during the year		6,868.77
Balance on hand June 30, 1894		131.23
Army Medical Museum, 1893:		
Balance on hand July 1, 1893		1,399.0[illegible]
Disbursed during the year		1,371.[illegible]
Balance on hand June 30, 1894		27.2[illegible]

Army Medical Museum, 1894:		
Appropriated by act of Congress approved February 27, 1893		$5,000.00
Disbursed during the year		4,194.30
Balance on hand June 30, 1894		805.70
Army and Navy General Hospital, for improvement and maintenance of grounds:		
Under act of Congress approved August 11, 1892—		
Balance on hand July 1, 1893		4,039.49
Disbursed during the year		3,043.05
Balance on hand June 30, 1894		996.44
Artificial limbs, 1891:		
Balance on hand July 1, 1893		495.09
Carried to surplus fund		495.09
Artificial limbs, 1892:		
Balance on hand July 1, 1893		26,773.20
Error in statement of balance on hand		1,086.85
Total to be accounted for		27,860.05
Disbursed during the year	$500.40	
Transferred to surplus fund	26,993.77	
		27,494.17
Balance on hand July 1, 1894		365.88
Artificial limbs, 1893:		
Balance on hand July 1, 1893		39,238.47
Refunded during the year to cover lost checks		150.00
Total to be accounted for		39,388.47
Disbursed during the year		4,823.55
Balance on hand June 30, 1894		34,564.92
Artificial limbs, 1894:		
Appropriated by act of Congress approved March 3, 1893		645,000.00
Disbursed during the year		586,391.44
Balance on hand June 30, 1894		58,608.56
Appliances for disabled soldiers, 1892:		
Balance on hand July 1, 1893		28.40
Carried to surplus fund		28.40
Appliances for disabled soldiers, 1893:		
Balance on hand July 1, 1893		245.17
Disbursed during the year		191.59
Balance on hand June 30, 1894		53.58
Appliances for disabled soldiers, 1894:		
Appropriated by act of Congress approved March 3, 1893		2,000.00
Disbursed during the year		1,086.42
Balance on hand June 30, 1894		913.58
Expended in furnishing trusses for disabled soldiers under the Revised Statutes, sections 1176 to 1178, and act of March 3, 1879		7,416.79
For support and medical treatment of destitute patients in the city of Washington, D. C.:		
Appropriated by act approved March 3, 1893		19,000.00
Disbursed during the year		19,000.00

LIBRARY OF THE SURGEON-GENERAL'S OFFICE.

The following table shows the additions made to the library during the fiscal year:

Description.	On hand June 30, 1894.	Added during fiscal year.	Total June 30, 1894.
Medical journals	32,215	1,062	33,277
Medical transactions	4,699	214	4,913
Bound theses	1,663	....	1,663
Bound pamphlets	2,258	346	2,604
Other medical books	69,818	2,272	72,090
Total	110,653	3,914	114,567
Medical theses	53,960	2,256	56,216
Medical pamphlets	*118,507	9,053	127,560
Total	172,467	11,311	183,778

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* Of the total number of single pamphlets on hand June 30, 1894, there were bound during the year 2,802, in 343 volumes.

There were presented to the library during the year 1,225 books and 10,258 pamphlets and journals.

Volume XV of the Index Catalogue, including from "Universidad" to "W," forming a volume of 842 pages, has been completed and is now in the printer's hands. The edition will be distributed, as soon as bound, to those institutions and persons who have received the previous volumes. The preparation of the manuscript of Volume XVI is already well advanced.

ARMY MEDICAL MUSEUM.

The total number of specimens received during the fiscal year was 1,363. The number of old microscopic specimens discarded as worthless was 1,357. The total number of specimens in the museum June 30, 1894, is 32,269. The following statement shows the details of additions, transfers, etc., in the different sections:

Pathological section:

In museum June 30, 1893	10,513
Transferred to provisional pathological section during the year	1
	10,512
Discarded during the year	2
	10,510
Received during the year	146
In museum June 30, 1894	10,656

Anatomical section:

In museum June 30, 1893	3,452
Received during the year	117
In museum June 30, 1894	3,569

Section of comparative anatomy:

In museum June 30, 1893	1,717
Received during the year	0
In museum June 30, 1894	1,717

Microscopical section:	
In museum June 30, 1893	12,770
Discarded as worthless	1,357
Added during the year	620
In museum June 30, 1894	12,033
Miscellaneous section:	
In museum June 30, 1893	1,640
Received during the year	254
In museum June 30, 1894	1,894
Provisional pathological section:	
In museum June 30, 1893	1,413
Transfered from pathological section during the year	1
Received during the year	179
In museum June 30, 1894	1,593
Provisional antomical section:	
In museum June 30, 1893	760
Received during the year	47
In museum June 30, 1894	807

RECAPITULATION.

Total number of specimens in museum June 30, 1893	32,265
Discarded during the year	1,359
	30,906
Total received during the year	1,363
Total number in the museum June 30, 1894	32,269

The Army Medical Museum has been visited during the year by 50,675 persons.

The following are some of the more interesting specimens added to the museum collection during the fiscal year ending June 30, 1894:

An anencephalous human fœtus. Presented by Dr. L. L. Friedrich, Washington, D. C.

An anencephalous human fœtus with spina bifida and bifid uvula. Presented by Dr. W. S. Leech, Morristown, Tenn.

A cyclocephalus human fœtus. Presented by Dr. W. J. Dillenbach, Washington, D. C.

The head of a cyclocephalous fœtal calf. Presented by Mr. Devlin, Fort Assinniboine, Mont., through Capt. C. E. Woodruff, assistant surgeon, U. S. Army.

The skull and brain of a cyclocephalus fœtal colt. Presented by Dr. C. B. Robinson, v. s., Washington, D. C.

A monstrous lamb, showing partial duplication of the thorax and an additional fore-limb. Presented by the U. S. National Museum, Washington, D. C.

A human fœtus, showing meningocele. Presented by Lieut. F. T. Meriwether, assistant surgeon, U. S. Army.

A series of three casts showing cleft palate. Presented by Dr. P. W. Moriarty, Harvard University, dental department, Boston, Mass.

The internal genital organs of a woman aged 31 years, who died thirty-three days after coitus from rupture of tubal pregnancy. Presented by Dr. W. C. Woodward, Washington, D. C.

Four specimens of mycetoma or fungous foot of India. Presented by Lieut. Col. Wellington Gray, brigade surgeon, Bengal army, professor of surgery Grant Medical College, Bombay, India.

The skull of a Chinese woman, showing excessive thickness of bone, osteitis deformans Received in exchange from Mr. Gustav Goldman, medical student, Baltimore, Md.

The skull of a boy, aged 7 years, showing marked asymmetrical development of two sides. Presented by Dr. S. S. Adams, Washington, D. C.

Calvarium of a man, showing tertiary syphilis. Presented by Capt. W. L. Kneedler, assistant surgeon, U. S. Army.

A pelvis showing exostoses of the acetabulum, and kidney showing hemorrhagic clot. From a soldier who was shot in the leg August 16, 1864; amputation in lower third of thigh August 17, 1864; reamputation at hip joint May 15, 1870; death twenty-nine years and five months after injury. Presented by Lieut. Col. W. H. Forwood, deputy surgeon-general, U. S. Army.

The upper jaw and adjacent bones of a horse, showing a large sarcoma. Presented by Dr. C. B. Robinson, v. s., Washington, D. C.

A specimen of cancer of the pharynx and œsophagus, with œsophago-tracheal fistula; from a colored woman, aged 50 years. Presented by Dr. E. F. King, Washington, D. C.

A large calculus from Steno's duct of a horse. Presented by Dr. C. B. Robinson, v. s., Washington, D. C.

Specimens of tuberculosis of lungs, bronchial glands, ileum and mesenteric glands; from a female infant, 4 months old. Presented by Dr. S. S. Adams, Washington, D. C.

A heart weighing 33 ounces, showing hypertrophy, dilatation, and valvular disease; from a soldier. Presented by Lieut. Col. W. H. Forwood, deputy surgeon-general, U. S. Army.

A heart showing aortic valve in two segments and immovable from calcareous deposits; from a white man, aged 33 years, who had been attending actively to business (mining engineer) up to the time of his death. Presented by Dr. W. C. Woodward, Washington, D. C.

A heart which shows a gumma involving the interventricular septum; from a colored man, aged 33 years. Presented by Dr. W. C. Woodward, Washington, D. C.

A stomach, showing perforating sarcomatous ulcer; from a woman, aged 37 years. Presented by Capt. W. C. Gorgas, assistant surgeon, U. S. Army.

Portions of stomach and duodenum of a horse which died of rupture of the former. A large number of larvæ of the botfly were found attached to the stomach and duodenum. Presented by Dr. C. B. Robinson, v. s., Washington, D. C.

The lower end of ileum and a portion of ascending colon, showing in the latter a cicatrix following shot perforation. Post-mortem thirty-two years after the receipt of the injury. From a soldier. Presented by Dr. W. T. Councilman, Boston, Mass.

A liver and a plaster cast of the same, colored after nature, showing cancer nodules. The liver weighed 29¼ pounds. From a negro, aged 54 years. Liver presented by Dr. F. J. Shadd, Washington, D. C. Cast prepared at the Army Medical Museum.

Specimen of dilatation of the bile ducts and gall bladder with cancer of the pancreas; from a man, aged 58 years. Operation by Dr. E. F. King, connecting the gall bladder and small intestine by fistula. Presented by Dr. E. F. King, Washington, D. C.

Specimens of shot perforation of liver and fracture of vertebra. Patient lived one month. Presented by Capt. G. E. Bushnell, assistant surgeon, U. S. Army.

Specimen of primary cancer of the gall bladder; from a soldier, aged 64 years. Presented by Lieut. Col. W. H. Forwood, deputy surgeon-general, U. S. Army.

A gallstone weighing 185 grains; found in an old cemetery. Presented by Dr. C. McWilliams, Washington, D. C.

A spleen from a colored girl, aged 18 years, showing tuberculosis. Presented by Dr. W. C. Woodward, Washington, D. C.

Specimens of tuberculosis of spleen and greater omentum; from an ox. Presented by Dr. D. E. Buckingham, v. s., Washington, D. C.

The spleen and liver of a mule, showing angiomatous tumors. Presented by Dr. C. B. Robinson, v. s., Washington, D. C.

A kidney converted into a sarcomatous mass, weighing 58 ounces; from a white man, aged 65 years. Presented by Dr. C. V. Boarman, Washington, D. C.

Specimen of cancer of left kidney with angio-sarcoma around right kidney; from a soldier, aged 26 years. Left testicle had been removed for cancer. Presented by Maj. A. A. Woodhull, surgeon, U. S. Army.

Specimen of tuberculosis of the kidney; from a negro woman, aged 25 years. Presented by Dr. D. S. Lamb, Washington, D. C.

A kidney showing pyo-hydronephrosis; successful nephrectomy; from a white girl aged 16 years. Presented by Dr. I. S. Stone, Washington, D. C.

A kidney showing pyo-hydronephrosis; removed by operation; from a man, aged 63 years. Presented by J. Taber Johnson, Washington, D. C.

The head of the penis of a horse 10 years old, showing epithelioma. Recovery after amputation. Presented by Dr. C. B. Robinson, v. s., Washington, D. C.

Fibromatous tumor involving the distal end of penis of a horse 14 years old. Recovery after amputation. Presented by Dr. C. B. Robinson, v. s., Washington, D. C.

Specimen of fibro-adenoma of testicle; from a soldier, aged 34 years. The patient recovered after the removal of the testicle. Presented by Lieut. Charles Lynch, assistant surgeon, U. S. Army.

Specimen of fibroma of ovary; from a white woman, aged 67 years; specimen removed by laparotomy. Presented by Dr. J. Taber Johnson, Washington, D. C.

Specimen of myo-fibroma of the uterus, weighing nearly 14 pounds; from a colored woman, aged 32 years. The patient recovered after excision of the tumor. Presented by Dr. I. S. Stone, Washington, D. C.

Specimen showing myoma of uterus, dermoid cyst of ovary and pyosalpinx; from a white woman, aged 51 years. Presented by Dr. J. Taber Johnson, Washington, D. C.

A series of thirty models showing forms of diseases of the skin and subcutaneous tissue. Prepared by J. Baretta, Paris, France. Purchased.

A model showing the central nervous system. Made by Rudolph Jung, Heidelberg, Germany. Purchased.

The brain of a Tonto Indian. Presented by Maj. W. Matthews, surgeon, U. S. Army.

A series of four corrosion injections of the arteries of the upper and lower extremities of infants at term. Prepared by Dr. E. R. Hodge, anatomist, Army Medical Museum.

A model of the human larynx, enlarged. Presented by Dr. H. Kronecker, Berne, Switzerland.

A series of four wax models showing the development of the labyrinth and acoustico-facial region of the human embryo. Prepared by F. Ziegler, Freiburg in Baden, Germany. Purchased.

A series of six wax models showing the development of the human teeth. Prepared by F. Ziegler, Freiburg in Baden, Germany. Purchased.

Models of dissections of the head and neck, arm and hand, and leg and foot of an adult, showing the muscles, arteries, veins, and nerves. Prepared by Emile Deyrolle, Paris, France. Purchased.

A series of eight wax models of brains of different animals. Prepared by Emile Deyrolle, Paris, France. Purchased.

Seventy sets of longitudinal sections of bones from man and the lower animals. Prepared by Dr. E. R. Hodge, anatomist, Army Medical Museum.

A series of bullets showing deformations by impact with ground and hard substances. Presented by Capt. C. E. Woodruff, assistant surgeon U. S. Army.

A set of Dr. H. A. Kelly's ureteral instruments, with calibrator and extra catheter. Made and presented by F. Arnold & Sons, Baltimore, Md.

Four hundred and seventy-six slides of sections of human embryos, containing 3,256 sections. Prepared by Dr. W. M. Gray, microscopist, Army Medical Museum.

ARTIFICIAL LIMBS.

During the fiscal year there were furnished under the laws relating to artificial limbs 343 artificial legs, 4 arms, 2 feet, and 2 apparatus; and the commuted value of an artificial leg was paid in 2,997 cases of amputation, of an artificial arm in 3,184 cases, and of an artificial foot in 72 cases. Commutation was paid also in 3,496 cases in which the use of a limb was lost. The money expended consisted of $586,391.44 from the appropriation for the year, $4,823.55 from the appropriation for 1893, and $500.40 from that of 1892, a total of $591,715.39.

There are at the present time 16,750 approved cases of loss of limb or loss of use of limb on the rolls, 3,395 cases of loss of arm, 3,603 cases of loss of leg, 99 of loss of foot, and 9,653 of loss of use of limb. These cases come up for payment every three years. Their commutation value amounts to $927,575, but as about 500 cases elect to be furnished with limbs in kind, this sum has to be increased by about $20,000 for the transportation of these maimed soldiers from their homes to the place of manufacture and return. The expense of transportation, which is paid by the Quartermaster's Department, and is refunded to that department out of the appropriation for artificial limbs, is an uncertain amount, depending chiefly on the distance traveled. From some calculations made in this office it is found to average about $40 per case. The sum of about $950,000 would therefore be required every three years to meet the requirements of existing legislation in the cases now on the rolls.

The expenditures from this sum are, however, not equably distributed over the three years, as may be seen from the following statement of the present condition of the rolls:

	Cases due during the years ending June 30—					
	1894.		1895.		1896.	
	Cases.	Value.	Cases.	Value.	Cases.	Value.
Arms, artificial, at $50 each	3,188	$159,400	137	$6,850	70	[illegible]
Legs, artificial, at $75 each	3,340	250,500	162	12,150	101	[illegible]
Feet, artificial, at $50 each	74	3,700	13	650	12	[illegible]
Loss of use of limb, commutation, $50	3,498	174,900	3,849	192,450	2,306	[illegible]
Annual total	10,100	588,500	4,161	212,100	2,489	[illegible]

Total cases, 16,750; value, $927,575.

The commutation value of the cases matured during the year ending June 30, 1894, amounted to $588,500; and as only 351 of the cases involved transportation to obtain limbs in kind, the total expenditure from the appropriation of this year will probably not exceed $604,000; of which sum $591,715.59 has, as stated above, already been expended.

The commutation value of the cases which become due during the fiscal year 1895 is $212,100, which will be increased to $213,000 by the expense of transportation. It must be remembered that the men who are entitled to benefit under the laws relating to artificial limbs are dropping from the list by death at the rate of about 1.6 per cent annually. This calculation of the present mortality is based upon statistics which were summarized on page 10 of the Report of the Surgeon-General, 1892. When the cases falling due in 1895 come to be paid about 4.8 per cent of the sum above estimated will not be required on account of deaths during the three years since these cases were last paid. The sum of $203,000 will probably cover the expenditures of this year, but as only $194,000 has been appropriated in the sundry civil bill for the year, cases to the amount of $9,000 maturing toward the end of the year will have to lie over for settlement until the beginning of the fiscal year 1896.

It will be seen from the above tabulation that there are in the file boxes of this office 2,489 cases which mature in the year ending June 30, 1896, calling for an expenditure of $126,975, or including transportation to have limbs fitted, $127,500. Deducting 4.8 per cent for deaths reduces this estimate to, in round figures, $121,000, and $9,000 added for the cases left unsettled from the previous year makes the sum needful for the year ending June 30, 1896, $130,000.

In these estimates no allowance has been made for new cases, as of late very few of these have been added to the rolls.

TRUSSES AND APPLIANCES.

The number of trusses issued during the year was 986; the number of surgical appliances, 133.

ARMY AND NAVY GENERAL HOSPITAL.

The capacity of the hospital is 80 beds, 16 for officers and 64 for enlisted men. The officers' division is open between the 1st of October and the last of June. Formerly there has been difficulty in accommodating all the applicants in the winter, but this was not the case during the past season. Fifteen officers, half the number of last year, were treated this year. Of these, 9 were on the active list of the Army, 1 retired, 1 recommended for retirement, 2 on the Navy active list, and 2 retired. Of the active Army officers 4 recovered their health and 5 were improved but not fit for duty when they left the hospital upon a continuance of sick leave. Of the active Navy officers 1 recovered, but the other did not improve and has since been retired. The average residence of the 5 who recovered was 94 days.

From all sources this year 101 enlisted men were admitted, against 84 the year before; and of the whole 82 were soldiers formally received from other commands, against 75 the previous year. At the beginning of the year there were 21 soldiers in hospital and at its close 16; there were therefore 87 completed cases, against 69 in the fiscal year 1893. Of these completed cases 1 died, 19 were discharged for disability, 1 by purchase, 3 by order (without honor), 2 were transferred to other stations still ill, 2, who were on furlough, resumed their status improved, and 59, or nearly 68 per cent of the whole, were returnd to duty, against 58 per cent during the previous year. Of 48 completed cases of rheumatism 29, or 60 per cent, went to duty, the proportion being the same as last year, when the numbers were 40 cases and 25 to duty. Of 19 discharged for disability the ability of 10, or 52 per cent, to support themselves by manual labor was reckoned at one-half or more. The subsequent histories of 49 cases in the calendar year 1893 returned to duty at other stations show that six months after leaving hospital, 36, or more than 73 per cent, remained well. The proportion the year before was 78 per cent. The average residence in hospital of the completed cases was 109 days; those returned to duty were present 72, and those discharged for disability 152 days. The latter figures last year were 105 and 104, respectively.

It still remains true that the full capacity of the hospital is not utilized, and medical directors are advised to recommend more transfers of appropriate cases. Among those returned to duty this year were several men whose discharge for disability had been recommended by post surgeons. Occasional cases not adapted to the place appear to have been sent there. Pulmonary cases do not do well. The commanding officer recommends that no man be sent who does not have a "good" military character. I approve of this.

Besides the usual allowance of $600 for minor repairs to the hospital, there was an allowance of $1,309.92 for more important work. This money has been expended in repainting the exterior brickwork, extending the steam heating, lowering the bath-house ceilings to economize heat, and repairing wear and tear. From a special appropriation made year before last for the improvement of the grounds, $3,043.05 was expended in boundary walls, fences and gates, and other masonry, in the care of plants, and in the change of site of the stable and wagon shed. There remains unexpended $996.44, which is being used in introducing new hot-water pipes and other similar improvements.

The commanding officer renews his recommendations for the introduction of electric light, and that cottage quarters be built on the grounds for the junior medical officer and the quartermaster, who are now required to live in the town of Hot Springs. I concur in these recommendations.

PROVIDENCE HOSPITAL.

Under the provisions of the act of August 3, 1893, making appropriation of $19,000 "for the support and medical treatment of ninety-five medical and surgical patients who are destitute in the city of

Washington, under a contract to be made with the Providence Hospital by the Surgeon-General of the Army," a contract was duly entered into with the institution named, and has been fulfilled to my satisfaction and without complaint on the part of the persons sent there for treatment. The following is a statement of the amount of relief afforded under the appropriation:

Number of patients in hospital July 1, 1893	[illegible]
Number of patients admitted during the year	[illegible]
Total number of patients treated	1,0[illegible]
Average number of patients admitted per month	[illegible]
Number remaining in hospital June 30, 1894	116
Total number of days' treatment afforded	37,[illegible]
Average number of days' treatment per patient	[illegible]
Average number of patients treated per day	[illegible]
Longest term of treatment (days)	[illegible]
Shortest term of treatment (days)	[illegible]
Number of patients in hospital during the whole year	[illegible]

The patients included in the statement represent all classes of diseases, acute and chronic, except those of a contagious nature. The patients shown as having remained in hospital during the whole year are incurable, without home or friends.

MEDICAL OFFICERS.

During the fiscal year ending June 30, 1894, the Medical Department of the Army lost 11 of its members, 1 by death, an assistant surgeon-general with the rank of colonel, and 10 by retirement; 2 assistant surgeons-general with the rank of colonel; 2 deputy surgeons-general with the rank of lieutenant-colonel; 3 surgeons with the rank of major, and 3 assistant surgeons with the rank of captain.

Promotions were made during the year as follows: Two deputy surgeons-general with the rank of lieutenant-colonel, to be assistant surgeons-general with the rank of colonel; 4 surgeons with the rank of major, to be deputy surgeons-general with the rank of lieutenant-colonel; 7 assistant surgeons with the rank of captain, to be surgeons with the rank of major, and 5 assistant surgeons with the rank of first lieutenant, to be assistant surgeons with the rank of captain.

An Army medical examining board was convened in October, and remained in session during the month for the examination of candidates to fill the vacancies then existing. Thirty-seven candidates were invited to appear before the board. One of these failed to appear, 1 declined examination, 1 withdrew after partial examination, 9 were rejected for physical disability, and 20 for professional disqualifications, while [illegible] were found qualified and were thereafter appointed assistant surgeons with the rank of first lieutenant.

At the close of the year there were ten vacancies in the number of appointments then allowed by law, and a board had been convened to select the individuals to fill these vacancies; but inasmuch as the Military Committee of the House of Representatives, in drafting the Army appropriation bill for the current year, seemed to regard a reduction of the numerical strength of the Medical Corps as desirable, the order convening the board was at my request rescinded, and the candidates who had been invited to appear for examination were notified of the indefinite postponement of the examinations. The bill when passed directed that the number of assistant surgeons be reduced to 110, a[illegible] to the corps of 15 young officers instead of 35, as originally proposed.

In the report of the Committee on Military Affairs to accompany H. R. 6373, the appropriation bill above mentioned, certain reasons were given in support of the recommendation of the committee to reduce the Medical Department which appear to be founded on a misapprehension of the facts. The report says: "When this department was reorganized by law in 1869 there were 210 military posts and stations in the country. This number has already been greatly reduced, so that there are now but 120 military posts and stations, and a still further reduction is proposed and will be effected within a few years. It is evident that if 193 officers in this department were sufficient when the number of posts and stations was 210, there can be as great a reduction as is proposed in this bill when the number of posts and stations is reduced to 120."

As a matter of fact there were 184 acting assistant surgeons in service in 1870, after the reorganization referred to, and these acting assistant surgeons performed all the duties of junior medical officers. They were made responsible for medical property and were ordered wherever their services were required, in the field with troops, as assistants at large posts, and as post surgeons at small posts. As the number of posts was reduced and the exigencies of the service permitted, their number was reduced as follows: In 1875 to 150, in 1880 to 111, in 1885 to 58, in 1890 to 48, in 1892 to 22.

In the bill making appropriations for the support of the Army for the year ending June 30, 1893, no appropriation was made for acting assistant surgeons, and no contract has been made for such service since that date. At present private physicians can be employed only by the visit, and there is no provision of law by which they can be placed in charge of the medical department at a military post. They are therefore not available for taking charge of a post hospital and the medical and hospital property necessary for the care of the sick and wounded of a garrison, or for the discipline and drill of the hospital corps detachment, for the sanitary supervision of the post, or for medical services to the families of officers and enlisted men.

On page 4 of the report of the committee it is stated that, "It may be necessary in several instances to employ outside attendance of physicians for the smaller posts, but that can always be done and efficient services secured at the cost of from one-fifth to one-fourth of the present average of salaries of the officers of the corps." As a matter of fact, private physicians have been employed during the past year and are now employed at all the arsenals of the country. The number of men at these stations is comparatively small, and a saving is made by paying for medical services by the visit. But it is a mistake to suppose that private physicians could be employed at garrisoned posts, whether large or small, at the low estimate cited above. Indeed, I question if there are more than half a dozen posts in the country where satisfactory medical attendance could be provided at less cost than the pay of an assistant surgeon of the Army, $133.33 per month. Moreover, a post medical officer has various and important duties to perform in addition to caring for the sick. In fact, his presence as a member of the garrison is more important than that of any other officer, for no other officer can perform his duties, whereas any line officer present can perform the duties of quartermaster, commissary of subsistence, adjutant or commanding officer, of a company or garrison. The Major-General Commanding, on page 12 of the committee's report, is cited as saying: "At military posts it is, in my judgment, impracticable to supply the necessary service, including that in the hospitals, in any other way than through the regular commissioned officer."

The report of the military committee further says: "In time of peace these men (enlisted men) should be, generally speaking, in sound health, physically and mentally." Great care is exercised in the examination of recruits, and they are in sound health physically and mentally at the date of enlistment; but, under the most favorable circumstances, a considerable number require the services of a physician after enlistment. This is shown by the fact that at the three recruiting depots, all in comparatively healthy locations, the average number on sick report every day during the year ending June 30, 1894, was—

At Columbus Barracks, Ohio	57.6
At Davids Island, N. Y	24.1
At Jefferson Barracks, Mo	21.8

The average number at Fort Clark, Tex., garrisoned by 314 officers and men, was 25.05; at Fort Myer, Va., garrisoned by 259, 16.21. It may be observed also that these averages represent the number borne on sick report; probably an equal number at every post has to be examined and prescribed for although not taken up on sick reports.

Again, an important part of the duty of a medical officer in a garrison is to decide whether enlisted men who report themselves sick, are in reality unfit to perform their duties, or whether they feign sickness for the purpose of avoiding these duties. A private physician called in by the visit is not present at sick call to determine this question, and when it is left to the decision of a nonprofessional person, a company officer, or noncommissioned officer, for instance, the man who feigns sickness has a better chance of success, and the really sick man is often compelled to do duty because he is suspected of malingering.

It is, however, when troops are ordered out for active service that the weakness of a Medical Department, consisting in part of medical men attending and paid by the visit, would be mainly felt. The principal reason for supporting an army in time of peace is that an efficient organization may be maintained which will be ready for service in any emergency and serve as a nucleus for the larger army which will be required in case of war. This applies to the Medical Department as well as to the fighting force. The duty of our medical officers is not only to attend the sick at their stations, acting at the same time as health officers for their command, but to be prepared, and to prepare their hospital-corps detachments, for any emergency, and especially for field service. The call to service in the field is more common in our Army than is generally supposed. During the year 1893 the number of men constantly in the field was 789, as reported by the 69 medical officers who were out with the various detachments which constituted the average field strength. The largest number of medical officers out in one month was 23, in September, with detachments aggregating 2,954 men and giving an average strength for the month of 1,663 men. It is in such field service that the need of the junior officers of the Medical Department is chiefly felt. In 1892, 76 medical officers were on field service, the average number of men thus serving having been 1,0[illegible]. In 1891, 93 medical officers were out with various detachments of troops having an average strength of 899 men, and in 1890, 143 medical officers with an average strength of 1,210 men. If attendance on the sick at military posts be made the gauge of the strength of the Medical Department no provision of medical officers can be made for troops in active service unless certain posts be deprived of their medical officers

During the recent troubles at Chicago, Ill., when 1,775 men were suddenly concentrated in that city, 3 medical officers on leave of absence threw up the unexpired portion of their leaves and reported for duty with the troops, and thus helped out the department in the emergency.

It must be remembered also that medical officers are as liable as other officers to break down under the exposures and accidents of field service or from other causes. During the past three years a little over 5 per cent of them have been constantly noneffective from sickness, or 10 officers of the 192 allowed by law up to the time of the passage of the current appropriation bill.

Again, these officers are as much entitled as other officers to leaves of absence; but inasmuch as the Regulations of the Army prescribe that leaves will not be granted "so that a post will be left without competent medical attendance," many of the officers of the Medical Corps have to do, year after year, without leaves such as are enjoyed by others. During the past ten years the leaves of absence granted to medical officers were equivalent to an average leave annually of a little less than 14 days for each. To enable the department to permit its officers to have one month's leave annually, and at the same time provide competent medical attendance at posts, a strength of 8.3 per cent is needful over and above that necessary to man the posts.

In view of these considerations I regard with regret the policy which has cut off 15 officers from the department.

I add here the views and opinions of the Major-General Commanding the Army and of the general officers commanding departments:

J. M. SCHOFIELD, MAJOR-GENERAL COMMANDING ARMY, *March 15, 1894:* It would, in my judgment, be seriously injurious to the military service to so reduce the officers of the Medical Corps that there would no longer be the necessary number of surgeons for permanent duty at the various military posts. Medical service may doubtless be employed for officers stationed in cities, and perhaps in some cases at much less expense than the salaries of a surgeon; yet when it is remembered that the Army surgeons stationed in cities, besides attending officers there, perform the very important duty of examining recruits, it is probable that the service rendered is less expensive as well as far more efficient than that which could be hired by the visit. At military posts it is, in my judgment, impracticable to employ the necessary service, including that in the hospitals, in any other way than through the regular commissioned officer.

So far as I am informed the experience of late years shows that the Medical Corps of the Army is none too large for the necessities of the service.

If these views meet the concurrence of the Secretary of War, I respectfully suggest that they be communicated to the committees in Congress having this matter in charge.

OLIVER O. HOWARD, MAJOR-GENERAL, COMMANDING DEPARTMENT OF THE EAST, *April 4:* In reply to your letter of the 19th ultimo, I have the honor to state that there are no medical officers on duty in my department whose services can be spared without prejudice to its interests, unless, of course, other officers are sent in their places.

There are at present on the roster of this department 37 medical officers; of these, 1 (the medical director) is on detached service in Europe, 1 (Maj. Cleary) is present, sick, 1 (Capt. Ball, temporarily attached) is absent on leave, 1 (Maj. Comegys) is present, sick, on partial duty, and 33 are present for duty.

Of this number 3 (Capts. Crampton, Wood, and Shannon) are assigned as attending surgeons and examiners of recruits in Baltimore, Boston, and New York, and the remaining 30 are distributed to the 26 different posts throughout the department, as follows, viz: One post (Washington barracks), where there is a considerable detachment of the Hospital Corps being trained for service, has 3 medical officers; 6 of the largest posts have 2; 16 posts 1 (the post surgeon, Maj. Comegys, at Fort Wadsworth being sick, is temporarily assisted by a civilian practioner); 2 posts (Fort Wood and Newport barracks) have none, the sick being cared for by medical officers from neighboring stations; and 1 post (Key West barracks) is under the professional care of a civilian practioner, fortunately of previous Army service.

It is desirable that a medical officer be assigned to duty at Key West barracks; with this addition the number in the department will be barely sufficient to perform the very exacting duties of the medical and sanitary service.

I am decidedly of the opinion that the services of a private physician, employed by the visit, can not be substituted for those of a medical officer in any military command without a very considerable sacrifice of the public interests; the duties of a medical officer for the Army require close attention to a large field of special work hardly at all in the line of civilian practice.

Civilian practitioners might be employed in the cities as attending surgeons and examiners of recruits, but it is doubtful if such could be obtained who would fit themselves for the latter duties, if only temporarily employed, and, as the charges of competent civilians are high, it is believed that efficient service could not be had from this source except at greater expense than the cost of the medical officer. With troops, under the varied conditions of service, a special class of physicians trained in the service is indispensable; the duty of these is to understand, anticipate, and meet conditions wholly out of the line of civilian practice; and without them experience has shown that the troops must endure great additional suffering in actual service. Such a class is not to be found in civil life; it is not the creation of a day, but the result of careful training and experience, and becomes especially valuable to the Government largely through such experience, and the knowledge gained in the performance of its duties in the public service.

The necessity for a medical department is recognized in all armies, and since its necessity is admitted, it is without dispute important that its efficiency should be maintained at the highest possible level, that it may not be found, when the emergency arises, in a condition of collapse.

NELSON A. MILES, MAJOR-GENERAL, COMMANDING DEPARTMENT OF MISSOURI, *March 27, 1894:* I have the honor to reply, in answer to questions contained in your communication of the 19th instant, as follows:

1. That none of the medical officers now on duty in my department can be spared without prejudice to the best interests of the service.

2. That there are no additional medical officers required in this department.

3. I do not think it would be advisable to depend upon private physicians at any of the military posts in this department; in fact, I think it would be a mistake to adopt such a system. The surgeon should be available at all times, not only to attend to the sick and disabled while in garrison, but be entirely free to move with the command instantly to any part of the country, and go with the troops into battle, where the services of experienced, well-trained surgeons are indispensable to the efficiency of the troops.

JOHN R. BROOKE, BRIGADIER-GENERAL, COMMANDING DEPARTMENT OF THE PLATTE, *March 27, 1894:* I have the honor to acknowledge the receipt of your letter of the 19th instant, in which, referring to the incorporation into the pending appropriation bill of a provision for the gradual reduction of the number of assistant surgeons from 125 to 90, you request me to state certain facts relative to the medical service in this department and pertinent to the question of the expediency of the proposed reduction. In reply, I beg to advise you as follows:

The number of medical officers on duty at the several posts in the department is sufficient for the performance of the duties devolving upon them at the present time. It is not, however, more than sufficient, and none could be spared without prejudice to the interests of the public service.

The employment, by the visit, under Army Regulation 1637, of private physicians living near military posts requiring medical attendance, does not in the long run conduce to the advantage of the service in my judgment. It has been tried at 2 of the smaller posts in the department—Fort Sidney, Nebr., and Camp Pilot Butte, Wyo. In neither case was the result satisfactory, except that it effected a slight saving in expense. The only available physician at the former post was reported as lacking the requisite qualifications for the work; and although there was no objection on the score of incompetency to the civilian doctor, who, in the absence of a medical officer, performed the sanitary service at Pilot Butte from August 10, 1893, to March 9, 1894, the management of the hospital, the discipline of the hospital corps detachment, and the care of the hospital property, was not what it ought to have been and would have been had such an officer been on duty at the camp.

The above statement is believed to be a full answer to the specific questions propounded. I would add, that as commander of various frontier posts for more than twenty years of my life, I found the proper supply of medical attendance to be among the most serious and troublesome problems with which I had to deal. There is less difficulty in this respect at this time; but even now, as department commander, I find it not always an easy matter to secure the services of medical officers for troops when detached from their posts for duty in the field. It must be borne in mind that not only the health of the individuals composing a military command, but also its discipline as a body depends in a large degree upon the medical officer who is assigned to duty with it. A sufficient knowledge of medicine and surgery, though essential, does not complete the requisite professional equipment of the military physician. To be thoroughly efficient as such, he must be conversant with the ways and customs of the service, the peculiar characteristics of its personnel, and the requirements of discipline; and an acquaintance with these can be acquired only by actual service with troops for a period of years.

After a careful consideration of the subject I am fully convinced that the Medical Department, as now constituted, is none too large, and that its reduction would lessen the efficiency of the military service.

A. McD. McCook, brigadier-general, commanding Department of Colorado: Your communication of March 19, 1894, relative to the proviso of Army appropriation bill reducing the number of assistant surgeons as vacancies occur to 90, is this day received.

I have the honor to reply to your questions in order, as follows:

(*a*) "Whether any of the medical officers now on duty in your department can be spared without prejudice to the interests of the service; and, if so, where the officers whose services can be dispensed with are now stationed?"

In my opinion and to the best of my information no medical officer in this department can be spared without prejudice to the interests of the service. This is one of the largest military departments in the United States; the posts are widely scattered over sparsely settled regions, and in many cases at a distance from railroads or towns. The garrisons generally are large, and the officers, troops, and families are entirely dependent upon the post surgeon in sickness, epidemics, and accidents.

The constant calls for movements of troops in connection with Indian affairs, troubles on the Mexican boundary, etc., make it necessary that at all the larger posts 2 medical officers should be stationed, that troops so moving may be accompanied by a medical officer, while the garrison remaining may not be deprived of medical help.

(*b*) "Whether any additional medical officers are required in your department; and, if so, at what stations?"

In my opinion the larger posts, as Huachuca, Whipple barracks, Wingate, Grant, Bayard, Logan, Douglas, and Apache should have 2 medical officers assigned, as is the case at present, and so far as I can see, no other medical officers are now needed, as in the case of need 1 officer can be temporarily withdrawn from any of these posts for temporary assignment in an emergency; but I am of the opinion that the number should not be further reduced, as great inconvenience may be experienced in cases of illness among the medical officers, expeditions, or any emergency calling for medical assistance.

(*c*) "Whether the services of private physicians living in the vicinity of military posts in your department who could be employed by the visit in case of sickness, under Army Regulation 1637, can be substituted for those of a medical officer of the Army at any post in your department without prejudice to the interests of the service; and, if so, at what posts such substitution can be made, and what saving would be effected thereby?"

The military posts of this department, with a few exceptions, are at a distance from villages or towns where physicians are residing, and even in cases where they are near, I am strongly of the opinion that neither by education nor qualifications are they suited to care for the sick at our military posts, nor would their services be generally acceptable to any of our garrisons. The constant presence of a medical officer is necessary with any body of troops, or at any military post. The care of the hospital and its supplies, the instruction and discipline of the hospital corps, the supervision of sanitary and hygienic conditions, require the services of educated and trained medical officers.

It has been necessary at times to secure the services of civilian physicians, but the results have been such as to emphatically prove that their services can not be substituted for the regular medical officers of the Army. Nor can these services be rendered "by the visit" with economy. The rates per visit and mileage are high, and the daily necessities of an ordinary post would make such services very expensive and entirely unsatisfactory.

The entire medical service of this department is, in my opinion, administered with judgment and fidelity, and I deprecate any change or reduction that may tend to render the service less efficient than it now is.

Frank Wheaton, brigadier-general, commanding Department of Texas: I have the honor to acknowledge receipt of your letter of March 19, 1894, in which you state that the Military Committee of the House of Representatives has decided to report a proviso in the Army appropriation bill reducing the number of assistant surgeons, as vacancies occur, to 90, the number at present allowed being 125; and in connection with which proposed reduction you propound the following interrogatories, with a view to transmitting my answer thereto to the honorable Secretary of War for the information of Congress:

(*a*) "Whether any of the medical officers now on duty in your department can be spared without prejudice to the interests of the service, and if so, where the officers whose services can be dispensed with are now stationed."

(*b*) "Whether any additional medical officers are required in your department, and if so, at what stations."

(*c*) "Whether the services of private physicians living in the vicinity of military posts in your department, who could be employed by the visit in case of sickness, under Army Regulation 1637, can be substituted for those of a medical officer of the Army at any post in your department without prejudice to the interests of the service, and if so, at what posts such substitution can be made, and what saving would be effected thereby."

In reply I respectfully submit the following:

(*a*) None of the medical officers now on duty in this department can be spared without manifest prejudice to the interests of the service.

(*b*) Additional medical officers are not required in the department at present; but in the event of any disturbance on the Rio Grande, requiring troops to take the field. as was recently the case, additional medical officers might be required, as they were then.

(*c*) The substitution of private physicians for medical officers of the Army in this department would probably involve expense and certainly result in diminished efficiency. Their introduction into garrisoned posts is absolutely impracticable. In all other departments of Army administration substitutes for the regular officers therein may be found by drawing on the line of the Army, the officers of which are qualified to some extent to perform any duty to which they may be assigned. In the Medical Department, however, a variety of duties aside from attendance on the sick devolve upon a surgeon that can only be performed by a commissioned officer. Therefore at least one officer of your department is indispensable in each garrisoned post of the Army, regardless of size.

Assuming that the medical service in other departments is on the same basis as in the Department of Texas, I should regard any reduction of the Medical Corps as a great misfortune to the Army.

E. S. OTIS, BRIGADIER-GENERAL, COMMANDING DEPARTMENT OF THE COLUMBIA: To the questions submitted in your communication of the 19th instant, to which you request answer, I would respectfully reply as follows:

To the first question: "Whether any of the medical officers now on duty in your department can be spared without prejudice to the interests of the service, and if so, where the officers whose services can be dispensed with are stationed."

I would answer: None can be spared. At the 7 posts of the department 9 medical officers have station, 1 of whom is now absent on leave. This, when all are present for duty, is 1 medical officer at the smaller posts and 2 at the large posts of Vancouver Barracks and Sherman. Owing to the absence of 1 medical officer from Fort Sherman, I am now a little embarrassed to secure the attendance of one with troops soon to make a march from that post to Fort Spokane.

To the second question: "Whether any additional medical officers are required in your department, and if so, at what stations."

I would answer: Yes; one at Fort Wallawalla to meet emergencies, one whose services would be available for the field without depriving a post of all medical aid. and who could temporarily relieve a medical officer if detached, ill, or necessarily absent for any reason, private or official.

To the third question: "Whether the services of private physicians living in the vicinity of military posts in your department, who could be employed by the visit in case of sickness, under Army Regulation 1637, can be substituted for those of a medical officer of the Army at any post in your department without prejudice to the interests of the service, and if so, at what posts such substitution can be made, and what saving could be effected thereby."

I would answer: No; not in any instance, and even if circumstances permitted such substitution, the constant demand which would be made for professional medical service would not result in any pecuniary saving to the Government.

P. T. SWAINE, COLONEL TWENTY-SECOND INFANTRY, COMMANDING DEPARTMENT OF DAKOTA: In reply to your letter of the 19th instant, I would state that in my opinion none of the medical officers now on duty in my department can be spared without prejudice to the service. In fact, the number is already inadequate, as I think there should be a medical officer at Fort Pembina, where now we have none. and an additional medical officer at Fort Custer.

Since June 30, 1892, no acting assistant surgeons have been employed, and all the work previously performed by them has since then devolved upon the commissioned medical officers of the Army, who, in spite of the fact that the number of military posts has been reduced, have been scarcely equal numerically to the requirements of the service.

I know of no post where the services of private physicians, employed by the visit under paragraph 1637, Army Regulations, can be substituted for those of medical officers of the Army without prejudice to the interests of the service and to the discipline and efficiency of the Hospital Corps.

Of the 11 posts in this department, Fort Pembina is the only one that has a settlement in its immediate vicinity from which it is practicable to get medical attendance. With reference to the other 10 posts and 1 camp, the vicinage of the towns and settlements where there are physicians living varies from about 3 to 35 miles.

Convinced, as I am, of the correctness of these views, I can not but deplore any legislation having for its object the reduction of the number of medical officers of the Army at this time.

THE ARMY MEDICAL SCHOOL.

I take pleasure in reporting the successful establishment of the Army Medical School authorized by General Orders No. 51, A. G. O., June 24, 1893. The value of a special course of study for passed candidates for the military service is recognized by the medical departments of many European armies. The absolute necessity of special training for the officers who are to be intrusted with the great responsibility of keeping the Army in its best sanitary condition was demonstrated in the British service during the progress of the Crimean war; and their Army Medical School was a product of the experience so dearly bought in that war. It has been in continuous and successful operation since 1857. The duty of an army medical officer is to preserve the efficiency of his command by guarding it against unsanitary influences and preventing disability from diseases that are known to be preventable. To this end he examines every candidate for enlistment, rejecting those who have any imperfection of physique or taint or weakness of constitution that would probably result in disability under the ordinary exposures of active military service; and he exercises a careful supervision over the health of the soldiers, that the sound physique brought with them into service may not be injured needlessly. To accomplish this in a satisfactory manner requires special training. Any well-educated medical man may be placed in the wards of a hospital and intrusted professionally with the care of its sick; but this, although of high importance, and particularly from the point of view of the patient, is a minor duty compared with that of preventing or suppressing the sickness that would otherwise fill the wards. The medical graduate, equipped as a general practitioner, is not qualified for such duty. Some of our medical officers have not only recognized this defect in the qualifications of their juniors, but have appreciated how much better their own early work might have been had their education been perfected as is that of the British medical officer at the Army Medical School at Netley, England. I need hardly say, therefore, that the want of such a school in this country has been greatly regretted, particularly by those who are conversant with the work of the European schools. The absence of facilities—of teachers, lecture rooms, laboratories and their equipment—has always presented an obstacle to the realization of any suggestion in this line. The expense of building up such an establishment and meeting its current requirements seemed to throw the proposition out of consideration, in view of the small number of young men that would be required annually to undertake its course of study prior to filling the vacant places in the Medical Department. And yet the very paucity of the number is, in my opinion, a principal reason why the abilities of each individual oining the corps should be trained sedulously in the lines of his future work. It is on the efficiency of the members of the Medical Department of our small Army that the care of the sick and wounded of the armies of the United States would chiefly devolve in the event of war. Every expenditure, whether of effort or of money, for the improvement of the Medical Corps is a sound investment, which will produce returns in an improved sanitary condition of our Army in time of peace, but will bear its best fruits, its golden harvest of good work in those times of anxiety and danger when the services of an Army are needed for active field operations.

Being fully convinced of the accuracy of these views, it was with much satisfaction that I recognized the possibility of improvising a school which, although adding nothing to the expenses of the Army Medical Department, would afford all the advantages that could be derived from one costing heavily for its establishment and maintenance. The building provided by Congress for the Library and Museum gave the necessary lecture rooms, and the accumulation of material for bacteriological and chemical study in the Army Medical Museum furnished every thing essential for laboratory work, so that by utilizing these, together with the abilities and experience of those medical officers already on duty in this city who have been appointed members of the faculty, I was enabled, with the approval of the Secretary of War, to inaugurate this important work. The transfer of the Hospital Corps company from Fort D. A. Russell, Wyo., to Washington barracks completed the equipment of the school by providing facilities for instruction in drill, company administration, first aid, and battle-field management.

The report of Col. Alden, president of the faculty, which I submit below, gives the details of the course of study during the session beginning November 1, 1893, and ending February 28, 1894. To this interesting document and its appendices I desire to invite attention, as showing fully the scope of the work of the school and demonstrating its importance and value.

I desire also to thank the members of the faculty for the earnestness with which they entered upon the work of the session and carried out its details, notwithstanding the large amount of additional labor which this imposed upon them. Most of these gentlemen served during the war of the rebellion, holding positions of high responsibility in the Medical Department, and are eminently qualified to hand down to the younger generation the lessons of their earlier experiences as modified by after thought and matured study. Of course without their hearty cooperation the school would have been one only in name. This cooperation, so zealously given, has been a source of gratification to me in manifesting the complete concurrence of these officers in my views, not only as to the importance, but as to the practicability of the undertaking. I unite with Col. Alden also in thanking the gentlemen who kindly enriched the course by valuable lectures on special subjects.

The progress of the school has been watched with interest and approval by the medical profession, and particularly by the medical officers of the National Guard.

In concluding this subject I desire to invite the attention of the Secretary of War to the recommendation given by Col. Alden that the examinations of student officers at the close of the session be taken into consideration in determining relative rank. At present the rank of these officers is already fixed, by the examination for entrance, when the session begins, and their work during its continuance can not alter their relative standing. This takes away an important stimulus to well-doing. I therefore concur in the recommendation of the president of the faculty that the relative rank of those commissioned on the same day be made dependent on the result of the examination for appointment and that of the examination held by the faculty of the school at the end of the session. I recommend that legislation authorizing this change be asked for.

ARMY MEDICAL SCHOOL,
Washington, D. C., March 6, 1894.

To the SURGEON-GENERAL OF THE ARMY:

SIR: I have the honor, as president of the faculty, to submit the following report, required by General Orders 78, Headquarters of the Army, Adjutant-General's Office, September 22, 1893. Copies of orders relating to the school are, for convenience of reference, hereto appended and marked A and B:

The course of instruction commenced on Wednesday, November 1, 1893, at the Army Medical Museum, Washington, as required by the order referred to, and with the faculty therein announced, namely:

Col. Charles H. Alden, assistant surgeon-general, U. S. Army, president of the faculty and lecturer on the duties of medical officers.

Lieut. Col. William H. Forwood, deputy surgeon-general, U. S. Army, professor of military surgery.

Maj. John S. Billings, surgeon, U. S. Army, professor of military hygiene.

Maj. Charles Smart, surgeon, U. S. Army, professor of military medicine and director of the chemical laboratory.

Capt. Walter Reed, assistant surgeon, U. S. Army, professor of clinical and sanitary microscopy and director of the pathological laboratory.

Capt. Julian M. Cabell, assistant surgeon, U. S. Army, assistant to professor of military surgery and instructor in hospital corps drill.

The rooms assigned for the use of the school at the Army Medical Museum proved convenient and suitable. They were used as lecture rooms, chemical and pathological laboratories, school library, and faculty room. The basement was used by the instructor in hospital corps drill for preliminary exercises.

The following courses of instruction have been given:

1. Duties of medical officers in war and peace—17 lectures and practical demonstrations.
2. Military surgery, the care of wounded in time of war, and hospital administration—14 lectures.
3. Military hygiene—15 lectures.
4. Military medicine—8 lectures.
5. Chemistry, general and sanitary—laboratory instruction two hours daily.
6. Pathology and bacteriology—laboratory work three hours daily.
7. Hospital Corps drill and first aid to sick and wounded—practical instruction from one to three hours weekly; instruction in riding one and one-half hours weekly.

Synopses of the lectures and of subjects taken up in the laboratory work, etc., are appended and marked C, D, E, F, G, H, I.

In addition to the lectures given by the faculty officially connected with the school, the following auxiliary courses have been given. They have proved highly interesting and a most valuable addition to the regular instruction of the school. The thanks of the faculty and students are due these gentlemen, who have kindly given their time and labor in aid of our work.

On bacteriology, 9 lectures, by Gen. Sternberg.

On military law, 5 lectures, by Maj. G. B. Davis, Judge-Advocate, U. S. Army.

On comparative anatomy, etc., 3 lectures, by Capt. J. C. Merrill, Medical Department, U. S. Army.

On medical jurisprudence, 4 lectures, by Dr. Robert Fletcher, F. R. C. S., England.

On parasites in man, 2 lectures, with 3 laboratory demonstrations, by Dr. C. W. Stiles, Department of Agriculture.

A very interesting and important lecture was delivered in the course of military surgery "On recent advances in the surgery of the head," by Prof. W. W. Keen, of Jefferson College, Philadelphia.

Synopses of the lectures in the auxiliary courses are appended, marked K, L, M, N, O.

The instruction in equitation was given at Fort Myer, Va., by Lieut. A. W. Perry, Ninth U. S. Cavalry, under the direction of Lieut. Col. G. V. Henry, commanding post, and was valuable and important, as two members of the class were entirely unused to riding. The thanks of the faculty are due Lieut. Perry for the time and attention bestowed on this work.

The daily order of duties is appended and marked P.

Nine medical officers have been in attendance at the school, as follows: The 5 assistant surgeons who were approved by the examining board last October and commissioned October 26, 1893, and 4 assistant surgeons of longer service. Among these, Capt. and Assistant Surg. William Stephenson, U. S. Army, obtained four months' leave from his post, Boise Barracks, Idaho, to attend the school, and 3 others, Capts. and Assistant Surgs. R. W. Johnson, J. L. Phillips, and G. L. Edie, stationed in Washington and vicinity, who took such part of the course, chiefly laboratory work, as their duties permitted.

The courses of instruction as planned have been fully carried out. No lecture hour has been unfilled and no laboratory work omitted. No unauthorized or unexcused absence on the part of any student officer has been reported, and the faculty have been much gratified by the industry, attention to duty, and obedience to the regulations for the school shown by the pupils. No loss or injury to books and apparatus beyond that incidental to their use or that which is usual has occurred.

Faculty meetings have been held on the first Mondays of each month from October to March, inclusive, or as soon after each date as practicable, and at other times as necessity required.

During the last week of the session the 5 newly appointed student officers were examined, in writing chiefly, by the several professors, and their relative proficiency in each branch was found to be as follows:

Duties of medical officers.—1, Howard; 2, Porter; 3, Wilson; 4, Quinton; 5, Bratton.

Military surgery—1, Wilson; 2, Porter; 3, Howard; 4, Quinton; 5, Bratton.

Military hygiene—1, Howard; 2, Porter; 3, Wilson; 4, Quinton; 5, Bratton.

Military medicine—1, Quinton; 2, Wilson; 3, Howard; 4, Porter; 5, Bratton.

Chemistry—1, Wilson; 2, Porter; 3, Howard; 4, Bratton; 5, Quinton.

Pathology—1, Quinton; 2, Wilson; 3, Howard; 4, Porter; 5, Bratton.

Bacteriology—1, Howard; 2, Quinton; 3, Wilson; 4, Porter; 5, Bratton.

Hospital corps drill and first aid—1, Howard and Quinton, being equal; 2, Porter; 3, Bratton; 4, Wilson.

The relative standing of the students, taking all the branches into account and their marking on the basis of 100 maximum, are as follows:

1. Assistant Surgeon D. C. Howard, U. S. A	83
2. Assistant Surgeon A. S. Porter, U. S. A	82
3. Assistant Surgeon W. H. Wilson, U. S. A	81
4. Assistant Surgeon W. W. Quinton, U. S. A	74
5. Assistant Surgeon T. S. Bratton, U. S. A	62

The closing exercises of the session were held on Wednesday, February 28, at 3 p. m., and consisted of introductory remarks by the president of the faculty, an address by Prof. William Osler, of Johns Hopkins University, Baltimore, Md., and advice to the class by Gen. Schofield, commanding the Army.

In concluding the work of the session, covering the four months ending February 28, the faculty find the plans they had prepared proved generally satisfactory, and while there are some minor changes which their experience has shown to be desirable at another session, it is not deemed necessary to invite attention to them at this time.

One point only, one of some importance, the faculty desire to present for consideration. Since the rank of the student officers is already fixed before they enter the school, and is not affected by their proficiency at the school, there is lacking the stimulus of emulation necessary in all educational institutions. It is very desirable that the future rank of those student officers who have entered the service just before the session of the school should be determined not by the examination for entrance into the corps only, but by the combined results of that examination and their work at the school as determined by the final examination. It is recommended that legislation looking to this change be asked for.

Very respectfully,

C. H. ALDEN,
Assistant Surgeon-General, U. S. A., President of Faculty.

APPENDIX A.

GENERAL ORDERS,
No. 51.

HEADQUARTERS OF THE ARMY,
ADJUTANT-GENERAL'S OFFICE,
Washington, June 24, 1893.

By direction of the Secretary of War, upon the recommendation of the Surgeon-General of the Army, an Army medical school will be established in the city of Washington for the purpose of instructing approved candidates for admission to the Medical Corps of the Army in their duties as medical officers.

The course of instruction will be for four months, and will be given annually at the Army Medical Museum, in Washington City, commencing on the 1st day of November.

Four professors will be selected from among the senior medical officers of the Army stationed in or near the city of Washington, and as many associate professors as may be required to give practical laboratory instruction in the methods of sanitary analyses, microscopical technique, clinical microscopy, bacteriology, urine analysis, etc.

The faculty of the Army Medical School will consist of—

1. A president of the faculty, who shall be responsible for the discipline of the school, and who will deliver a course of lectures upon the duties of medical officers in war and peace (including property responsibility, examination of recruits, certificates of disability, reports, rights and privileges, customs of service, etc.).

2. A professor of military surgery (including the care and transportation of wounded).

3. A professor of military hygiene (including practical instruction in the examination of air, water, food, and clothing, from a sanitary point of view).

4. A professor of clinical and sanitary microscopy (including bacteriology and urinology).

By command of Maj. Gen. Schofield:

R. WILLIAMS,
Adjutant-General.

APPENDIX B.

GENERAL ORDERS, No. 78.

HEADQUARTERS OF THE ARMY,
ADJUTANT-GENERAL'S OFFICE,
Washington, September 22, 1893.

By direction of the Secretary of War, upon the recommendation of the Surgeon-General of the Army, the faculty of the Army Medical School, established by General Orders, No. 51, June 24, 1893, from this office, and regulations for the government of the school, are announced as follows:

FACULTY OF THE ARMY MEDICAL SCHOOL.

Col. Charles H. Alden, Assistant Surgeon-General, U. S. Army, president of the faculty, and lecturer on the duties of medical officers.

Lieut. Col. William H. Forwood, Deputy Surgeon-General, U. S. Army, professor of military surgery.

Maj. John S. Billings, surgeon, U. S. Army, professor of military hygiene

Maj. Charles Smart, surgeon, U. S. Army, professor of military medicine and director of the chemical laboratory.

Capt. Walter Reed, assistant surgeon, U. S. Army, professor of clinical and sanitary miscroscopy and director of the pathological laboratory.

Capt. Julian M. Cabell, assistant surgeon, U. S. Army, assistant to professor of military surgery and instructor in hospital corps drill.

THE COURSE OF INSTRUCTION.

"The course of instruction will be for four months, and will be given annually at the Army Medical Museum, in Washington City, commencing on the 1st day of November." It will include lectures on and practical instruction in—

1. The duties of medical officers in war and peace.
2. Military surgery, the care of the wounded in time of war, and hospital administration.
3. Military hygiene.
4. Military medicine.
5. Microscopy, sanitary and clinical; pathological histology, bacteriology, and urinology.
6. Hospital corps drill, and first aid to wounded.

By permission of the Surgeon-General medical officers of the Army who desire to avail themselves of the course of instruction, and who are stationed in or near the city of Washington, or who have a leave of absence which enables them to attend the course, may be admitted as pupils under the same regulations as apply to recently "approved candidates for admission to the Medical Corps of the Army."

EXAMINATIONS.

At the termination of the course of instruction the "approved candidates for admission to the Medical Corps of the Army" will be examined by the several professors, and their relative proficiency in each branch will be reported by the president of the faculty to the Secretary of War through the Surgeon-General of the Army.

REGULATIONS.

1. The president of the faculty will be responsible for the discipline of the school.

2. The junior professor will act as secretary and will be responsible for all property pertaining to the school.

3. A faculty meeting will be held in the office of the secretary on the first Monday of each month from October to March, inclusive, and whenever called by the president of the faculty or the Surgeon-General of the Army.

4. Resolutions adopted by the faculty relating to the course of instruction, the purchase of books and instruments, etc., will be submitted to the Surgeon-General of the Army for his approval.

5. The president of the faculty will submit to the Surgeon-General of the Army, on or before the 1st day of April of each year, a detailed report of the condition of the Army Medical School, including an account of the instruction given and the proficiency of the several pupils as shown by an examination made by each professor at the termination of his course.

6. The hours of instruction will be from 9 to 12 a. m. and from 1 to 4 p. m., daily, from November 1 to February 28, inclusive, with the exception of Saturdays, Sundays, legal holidays, and the week commencing December 25.

7. Pupils will be required to be present during the hours designated unless specially excused by the president of the faculty or by orders from the War Department.

8. When necessarily absent on account of sickness or other emergency, pupils will, as soon as practicable, send a written statement to the secretary of the faculty, explaining the reason for such absence.

9. The laboratories and library of the Army Medical School will be open for the use of pupils during the hours of instruction designated.

10. Pupils will be held strictly accountable for all instruments and apparatus issued to them for their personal use during the course of instruction, and for any loss or injury to books or apparatus belonging to the Army Medical School, when such loss or injury is due to carelessness or neglect.

11. Pupils in the Army Medical School, during the hours of instruction, will wear the undress uniform of the grade to which they belong, except when engaged in laboratory work, when a black cambric laboratory gown may be worn.

By command of Maj. Gen. Schofield:

R. WILLIAMS,
Adjutant-General.

APPENDIX C.

Duties of medical officers.—Army Medical School, session 1893–'94. By Col. C. H. ALDEN, Assistant Surgeon-General, U. S. Army.

Lecture I.—Course practical, not historical nor comparative; military discipline. Position of the medical officer; command, rank, title. Duties: (1) To admit none but effective men; (2) to keep them effective; (3) to relieve sick and wounded.

Lecture II.—Examination of recruits. How foreign armies are recruited. U. S. recruiting service. Regulations and requirements. Mode of examination. Personal identification system; outline-figure cards.

Lecture III.—Sanitary duties of medical officers; importance; recent origin. Regulations, paragraph 1642. Duties advisory; necessity of studying record of previous inspections. Two classes of defects; of construction permanent, of administration remediable. Plan of inspection.

Lecture IV.—Sanitary duties continued. Barracks and quarters; kitchen; guardhouse; post exchange; storehouses; cellar; bakehouse. Points especially requiring attention in each. Drainage and sewerage; disposal of refuse; sinks; disinfectants. Water supply. Clothing. Habits. Cooking and rations. Reports.

Lecture V.—Medical attendance. Regulations. Persons entitled to attendance, to admission to hospital and to medicines. Sick call, how conducted. Records and reports.

Lecture VI.—Private practice; regulations. Insane soldiers; diagnosis of usual forms; how disposed of; necessary papers.

Lecture VII.—Certificates of disability; regulations; method of procedure. Proper cases for discharge; points specially to be regarded. Pension Bureau, its work and relation to Medical Department.

Lecture VIII.—Certificates for sick leaves. Army and Navy General Hospital, Hot Springs; proper cases for and mode of admission; transfers of enlisted men on account of health. Soldiers' Home, Washington, D. C.; proper cases for and mode of admission.

Lecture IX.—Property responsibility. Medical, etc., nature, necessity, returns, requisitions, transfers, disposition of unserviceable property. Standard supply table, Medical Department.

Lecture X.—Hospital administration. Daily routine. Construction and repairs; estimates; inspection of work. Hospital fund; source; proper expenditures therefrom. Returns.

Lecture XI.—Duties of medical officers on scouting parties; on the march; in camp; necessity of readiness for emergencies and field duty; organization of camps and sanitary inspection thereof.

Lecture XII.—Malingering, including concealment, feigning, and artificial production of disabilities. The principal diseases and injuries the subject of malingering and the mode of detection.

Lecture XIII.—The most common errors of refraction as they affect target practice and other military duties. Diagnosis and correction by test lenses.

Lecture XIV.—Duties of medical officers in command of hospital corps detachment. Assignment of duties; discipline; instruction; employment in personal service; returns and reports; official correspondence. Official and social etiquette.

NOTE.—In addition to the lectures proper, practical demonstration and instruction have been given in examination of recruits at rendezvous, Washington, D. C.; in sanitary inspection of posts at Washington Barracks, D. C.; in diagnosis of refraction errors and use of test lenses at Army Medical School. The student officers have been required to prepare enlistment papers, outline cards, certificates of disability, certificates for sick leave. and reports of sanitary inspections.

APPENDIX D.

Military surgery.—Care and transportation of the wounded and hospital administration, Army Medical School, session 1893-'94. By Lieut. Col. W. H. FORWOOD, Deputy Surgeon-General, U. S. Army.

Lecture I.—Introductory: Brief sketch of the history of Army medical aid; in ancient times; in the middle ages. Early methods; flying ambulance of Baron Larrey. Brancardiers; modern development and perfection of the system.

Lecture II.—Weapons of war: Evolution of modern firearms and its influence upon military surgery. The new small-caliber rifle and projectile; the new high-power explosives and smokeless powders; ballistic data; artillery weapons and explosive missiles; side arms. Tables, charts, and specimens.

Lecture III.—Military surgery: General considerations; conditions of civil and military practice contrasted. Preparations for the field; lines of medical aid; sanitation and technique of field surgery.

Lecture IV.—Gunshot wounds; general character from a ballistic standpoint; comparison of wounds made by the old missiles with those of the new small-caliber cupro-nickle steel-cased bullet. Experimental data; range, velocity, penetration, impact, hydraulic pressure, and zones of various effects. Tables, drawings, and charts.

Lecture V.—Gunshot wounds continued: Character and immediate effects of wounds made by the new small-arm rifle on the living subject Unreliable results of experiments on the cadaver. Experience gained with the new bullet in riots, accidents, and suicide. Experience during the civil war in Chile. Illustrative cases.

Lecture VI.—Gunshot injuries; produced by explosive projectiles or those used by the artillery arm of the service.

Explosive missiles of a less weight than 400 grams prohibited in warfare by international law; effects of new powders in the propulsion and bursting of shells; character and velocity of fragments; nature and gravity of injuries; shock, pain, treatment. Ballistic charts, specimens, and target illustration.

Lecture VII.—Infrequency of primary bleeding from gunshot wounds; blood vessels more frequently wounded by the new bullet; general character, classification, and description of these injuries; primary and secondary hemorrhage; circumscribed and diffuse aneurism; diagnosis, prognosis, treatment. Statistical tables, drawings, and numerous specimens.

Lecture VIII.—Gunshot injuries of the bones: Primary lesions; classification and description, illustrated by numerous specimens from the museum; secondary results; inflammation, suppuration, osteomyelitis; general septicæmia; thrombosis; pyæmia; diagnosis, prognosis. Tables, charts, and specimens.

Lecture IX.—Treatment of gunshot fracture: Conservative; antiseptic occlusion temporary support, removal from the field, enlargement of wound, removal of fo eign bodies, ligation of vessels, permanent dressing, immobilization. Nonconserv tive; resection, amputation. Conditions requiring and rules governing these operations. Illustrative cases and statistical tables.

Lecture X.—By Dr. W. W. Keen: On the complications of chronic otitis media and their surgical management, and on the diagnosis and treatment of cerebral and cerebellar tumors in general, with drawings, specimens, and illustrations.

NOTE.—This hour had been set apart in the regular course for gunshot wounds of the head.

Lecture XI.—Gunshot wounds of the throat and chest: Injuries about the larynx; necessity for tracheotomy; operation; superficial wounds of the chest walls; penetrating wounds, character with the new bullet; complications; hemorrhage, emphysema, pneumothorax, fractures of ribs, clavicle and scapula, hernia of the lung, lodgment of foreign bodies, pleurisy, hydrothorax, empyema, pneumonia, pericarditis. Tapping the pleural cavity; resection of ribs. Old cases of chest wounds and empyema presented for illustration.

Lecture XII.—Gunshot wounds of the abdomen: Classification; regional anatomy; gravity of penetrating wounds for different regions; wounds of different organs, differentiation; complications; diagnosis; prognosis; influence of new bullet on; comparative results of the operative and expectant plan of treatment, expectant method; laparotomy, exploratory and formal; conditions, technique, after management. Illustrations, instruments, charts, drawings, and statistics.

Lecture XIII.—Antiseptic technique in military surgery and the care of the wounded: Antiseptic management of gunshot wounds, principles involved, difficulties to be overcome in the field; advantages over old methods; results accomplished; technique of prominent military surgeons. Common errors in operating and how to avoid them. Importance of diagnosis. Specimens and illustrations.

Lecture XIV.—At Soldiers' Home Hospital. Hospital administration: General principles which underlie administrative duties. Personal knowledge of details. Thorough organization. Every man independent in his own sphere; but one immediate superior; the ruinous effects of idle time Neatness, order, and industry are habits which men will acquire under proper inducement. Inspection of hospital, practical illustrations, blanks, forms, and methods.

APPENDIX E.

Military hygiene.—Army Medical School, session 1893–'94. By Maj. J. S. BILLINGS, surgeon U. S. Army.

Lecture I.—The Army Medical Museum and Library: Origin; development; present condition; comparison with other similar institutions; organization; scope and methods of work; needs and prospects.

Lecture II.—How to use the library. Medical bibliography. Methods of literary research. The literature of military medicine and of hygiene.

Lecture III.—History of hygiene: Jewish; Greek; Roman; Salernum. Leprosy. Black death. Smallpox and vaccination. Typhus and typhoid. Cholera. Southwood Smith. Chadwick. Health of towns commission. Farr. Simon. Local government board. Imperial board of health of Germany. National Board of Health. Massachusetts State board of health. Pasteur and Koch.

Lecture IV.—History of military hygiene: Roman; Fifteenth century. Syphilis War of independence. Crimean war. Parkes. Barrack commission. War of secession. Franco-German war. Present relations of Army medical officers to sanitation.

Lecture V.—The causes of disease. Classification. Methods of investigation. Statistics, vital, medical, and sanitary, and methods of obtaining and compiling. Death rates.

Lecture VI.—Relations of age, sex, and race to morbidity and mortality. Sickness and death rates in different armies. Life tables.

Lecture VII.—Air: Temperature; pressure; moisture; offensive effluvia; dusts; ventilation; heating.

Lecture VIII.—Water supply: Sources; impurities. Epidemics due to water supply. Examples of typhoid, dysentery, cholera. Storage of water. Distribution, purification, filtration, aeration; ice.

Lecture IX.—Sewage disposal and sewerage. Irrigation. Intermittent filtration. Chemical treatment. Separate systems of sewerage. Size and grade of pipe and brick sewers. Ventilation of sewers. Dry system. Earth closets.

Lecture X.—House drainage and disposal of refuse. Sewer gases. Soil pipes. Traps. Ventilation of pipes and traps. Municipal plumbing regulations. Fixtures. Garbage. Cremation. The disposal of the dead.

Lecture XI.—Habitations. Soils and sites. Camps and posts. Soil drainage. Malaria. Building materials. Light and artificial illumination.

Lecture XII.—Barracks and hospitals: Floor space and cubic space; foundations and cellars; protection from dampness; plans of hospitals; methods of heating and ventilation.

Lecture XIII.—Food and rations: Quantity; quality. Scurvy. Adulterations. Cooking.

Lecture XIV.—Personal hygiene: Exercise; baths; clothing, etc. Hygiene of troops in the field.

Lecture XV.—Sanitary jurisprudence: Municipal; State and National. Law of nuisance. Notification of disease. Quarantine. Relations of Army medical officers to State and National sanitary authorities.

APPENDIX F.

Military medicine.—Army Medical School, session of 1893–'94. By Maj. Charles Smart, surgeon, U. S. Army.

Lecture I.—Nomenclature and classification of diseases. Rates of admission to sick report; of nonefficiency, discharge and death in times of peace, and influence of various factors on these rates, as of rank, corps, age, climate, season, topographical features, various local conditions, and personal equation of medical officers.

Lecture II. Prevalence of particular diseases and classes of disease in times of peace: Injuries; diseases of the digestive system; of the respiratory system; diarrheal, malarial, rheumatic; diseases of the nervous system; of the integuments; venereal, dietetic, and specific febrile diseases; diseases of the eye and ear, and of the circulation.

Lecture III. Diseases affecting scouting parties or expeditionary columns. Discomforts and dangers of the march, chafings, blisters, prickly heat, exhaustion, sunstroke. Diseases due to changes in the weather; to chill consequent on overheating; to exposure to miasmatic influences; to change of diet, and to defective dietary.

Lecture IV. The diseases affecting new levies in time of war. Smallpox; vaccination and vaccine. Measles; course of disease and treatment in cases of affected individuals and affected regiments. Mumps. Regimental epidemics of typhoid fever.

Lecture V. Diseases prevalent in time of war. Diarrhea and dysentery; anatomical characteristics; causes treatment of epidemics; of individuals.

Lecture VI.—Malarial fevers; intermittents, remittents, adynamic remittents, pernicious cases, and chronic cases; pathological anatomy; causation; prophylaxy and treatment.

Lecture VII.—Typhoid fever; history and prevalence. Mild and abortive cases; so-called typical cases; severe cases; sequelæ. Cases modified by malarial and scorbutic taint. Difference between cases of civil and of camp typhoid fever. Pathological anatomy; etiology; treatment.

Lecture VIII. Typhus fever; history; latest developments in military camps; prevention; treatment. Cerebro-spinal fever; local outbreaks; symptoms; pathology; treatment.

APPENDIX G.

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
Washington, D. C., February 10, 1894.

COL. C. H. ALDEN,
President of the Faculty, Army Medical School:

SIR: I have the honor to report as follows of the course and progress of the class in sanitary chemistry during the first session of the school, 1893–'94. The time allotted to laboratory work was two hours daily, from 1 to 3 p. m., on five days of every week. The first two weeks of the course were devoted to analytical chemistry as taught in our medical colleges in order to freshen the knowledge of the students on this subject and to familiarize them with chemical manipulation and laboratory methods. Special attention at this time was given to the detection of mineral poisons, as arsenic in organic mixtures, wall papers, etc., antimony, mercury, lead, etc., in nostrums, and the methods of separation taught were those that would be most useful for quantitative purposes. Four weeks were spent in quantitative work, during which both gravimetric and volumetric methods were taught with especial reference to the solution of sanitary questions; after which, special subjects were taken up, as the quantitative demonstration of the constituents of normal and abnormal urine; the examination of air and the determination of ventilation by the chemical method; the study of water supplies and the derivation of the organic substances dissolved in them; the examination of articles of food as to quality and freedom from adulteration, including milk, butter, cheese, bread, flour, baking powders, wines, spices, etc., and a study of some of the more important alkaloids and ptomaines. I regret that the time at command did not permit of perfect work under each of these headings, but I feel confident that each of the student officers has had that amount of laboratory training that will enable him to take up any one of the subjects and prosecute it to advantage.

I append to this communication a synopsis of the course of eight lectures given by me on the subject of military medicine.

Respectfully,

CH. SMART,
Major and Surgeon, U. S. Army.

APPENDIX H.

WASHINGTON, D. C., *February 24, 1894.*

Col. CHARLES H. ALDEN,
Assistant Surgeon-General, U. S. Army,
President Army Medical School,
Washington, D. C.:

SIR: I have the honor to submit the following report of the work done in the pathological laboratory of the Army Medical School during the session 1893-'94.

In order to prepare the members of the class for a proper study of bacteria and pathological histology, the first two weeks were occupied with the preparation of the various media required for the culture of bacteria and with learning the methods of hardening and embedding of tissues and section cutting. This having been satisfactorily accomplished, a systematic study of the pathogenic bacteria was undertaken in the bacteriological course, the class having been first made acquainted with the necessary technique by the study of one nonpathogenic organism.

Among the pathogenic organisms studied were the following: Bacillus anthracis, typhoid bacillus, bacillus coli communis, bacillus tuberculosis, bacillus diphtheriæ, staphylococcus pyogenes aureus, staphylococcus albus, streptococcus pyogenes, micrococcus pneumoniæ crouposæ, and the spirillum of Asiatic cholera, together with the other pathogenic spirilla. The last few days of the session were devoted to the study of the tetanus bacillus, though this work remained incomplete. More importance was given to the study of the typhoid-bacillus, bacillus tuberculosis, bacillus of diphtheria, diplococcus of pneumonia, the pyogenic bacteria, and the spirillum of Asiatic cholera than to the other organisms. Nearly four weeks were devoted to a careful and systematic study of the bacillus of diphtheria alone.

The inoculation of animals with the bacillus anthracis, tubercle bacillus, diphtheria bacillus, the micrococcus of pneumonia, and the staphylococcus aureus was performed during the session by the members of the class. Autopsies were carefully conducted, and the method of recovering various organisms in pure culture was thoroughly carried out. The tissues were hardened, embedded, and cut by the class, and the sections of all organs stained so as to show the relations of the different organisms to the tissues.

In the course on pathological histology more than two weeks were given to the study of inflammation, as shown in the frog's mesentery, the inflamed ear of the rabbit and cat the heart muscle and kidney of the rabbit inoculated with staphylococcus aureus, and in granulation tissue from wounds. Under this head, also, the study of the organization of the blood clot was pursued. It was considered absolutely essential that the members of the class should have a thorough and well grounded knowledge of inflammation prior to the study of other pathological changes. Afterwards the various lesions occurring in the lung, liver, and kidney, were systematically studied. My original intention had been to add to these the study of the lesions of spleen and intestine, but it was seen that the time was too brief to permit of this. These were omitted in order to devote three weeks to the microscopic study of the urine. The last twenty days of the session were occupied with the study of tumors, and a very complete series of benign and malignant growths was examined microscopically. From time to time during the session, in addition to almost daily quizzes, formal examinations were required; thus, a special examination was given to inflammation, to diseases of the lung, of the liver, of the kidneys, and tumors.

During the month of February the class was instructed in the study of animal parasites by Prof. C. W. Stiles, of the Agricultural Department; this instruction was thorough and of much value.

While I do not think that there is any necessity for modification in the course of study pursued in the bacteriological laboratory, I believe that it would enhance the value of the course in pathological histology to devote more time to the microscopical study of the urine and tumors than has been possible during the present session, and to add to these the careful microscopical study of the blood in health and disease. This can be done during the coming session, together with a thorough study of inflammation and the *principal* lesions found in the lung, liver, spleen, kidney, stomach and intestine, omitting from the course the less important changes in these organs. It is also hoped that some attention can be given during the second session to the microscopical study of the lesions of the cord and nerves.

In conclusion, I may remark that although no member of the class has exhibited any special enthusiasm for the work pursued in this laboratory, all have acquitted themselves to my satisfaction.

Very respectfully, your obedient servant,

WALTER REED,
Surgeon, U. S. Army, Professor of Clinical and Sanitary Microscopy.

APPENDIX I.

WASHINGTON BARRACKS, D. C., *February 24, 1894.*

To the PRESIDENT ARMY MEDICAL SCHOOL,
Washington, D. C. (through professor of military surgery):

SIR: I have the honor to submit the following report upon the course of instruction in first-aid treatment and litter drill at the Army Medical School during the past session:

In the beginning of the course of instruction the students were taught the position of the soldier, the salute with the hand, and the marchings.

This was alternated with the setting-up exercises, which were kept up for sometime during the session in order to improve their general bearing as military men.

The litter drill was taught by drilling the students themselves, and when they were proficient in this by requiring each of them in turn to drill the others. In this way they were accustomed to give orders. They were required to recite on the drill regulations.

The manual of the sword was also taught them.

As soon as they were proficient they were required to command a squad of enlisted men and to put them through the drill.

Since the middle of December they have been required to attend the official Saturday morning inspection of the Hospital Corps detachment at Washington barracks.

They took, in turn, command of the detachment and also the positions of the junior officers of the inspection.

They were required to accompany the inspecting officer through the hospital when the hospital was inspected.

During the early part of the session, before they had learned to command a squad of men, they were instructed in bandaging and were shown in detail the Hospital Corps equipment.

It was desired especially to make them familiar with the field equipment. The contents of the pouches, panniers, and instrument cases were examined carefully.

They were taught especially the use of the triangular bandage and the methods of rendering first-aid treatment on the battlefield, such as the application of improvised tourniquets and improvised splints.

Instruction in riding was given the students at Fort Myer, Va., by Lieut. A. W. Perry, Ninth Cavalry, U. S. Army. Lieut. Perry deserves much credit for his interest in the class and for the good results he obtained. They were all improved by this instruction, and two of them, who had never ridden before, were taught to ride.

I have the honor to report that, in my opinion, greater advantage would have been received by the students if they had been stationed in a garrison where they might have become familiar with their daily military duties. In that case, they would have but little to learn when they report for regular duty at a post.

As it is, it has been impossible to do more than refer to many important details, which can be learned only by direct contact with the soldier. The students would be under better discipline, and could be taught the importance of being prompt on all occasions. When brought so intimately in contact with the enlisted men they would take more pride in their military deportment. It would be an incentive for them to learn all of their military duties.

For the above reasons I would recommend that the members of the next class be assigned to duty with the Hospital Corps company of instruction which is to be organized at this post. This duty would be of great advantage to them.

If there will not be sufficient room in the hospital for the whole class, two of them at a time might be ordered here for a month's service. This would not interfere with their other studies. In would give an opportunity for short and frequent drills, however, which would make them more proficient.

Very respectfully, your obedient servant,

JULIAN M. CABELL,
Captain and Assistant Surgeon, U. S. Army.

APPENDIX K.

Bacteriology.—Etiology and prevention of infectious diseases. Army Medical School, session 1893-'94. By George M. Sternberg, Surgeon-General, U. S. Army.

Lecture I.—Morphology of bacteria; classification of bacteria; historical résumé.

Lecture II.—General biological characters; reproduction; motions; conditions of growth; modifications of biological characters; products of vital activity.

Lecture III.—Saprophytes: Bacteria in the air; in water; in the soil; in putrifying material; in the alimentary canal, and upon the surface of the body of healthy individuals.

Lecture IV.—Pathogenic micrococci, including pus cocci and micrococcus of pneumonia.

Lecture V.—Pathogenic äerobic bacilli, including bacillus of tuberculosis, of anthrax, of diphtheria, of typhoid fever, of glanders, of influenza.

Lecture VI.—Pathogenic anäerobic bacilli, including bacillus of tetanus and of malignant œdema.

Lecture VII.—Pathogenic spirilla, including spirillum of relapsing fever and of Asiatic cholera.

Lecture VIII.—Influence of physical agents on bacteria. Antiseptics and disinfectants. Practical measures of disinfection.

Lecture IX.—Acquired immunity.

Lecture X.—Etiology and prevention of yellow fever and of cholera.

APPENDIX L.

Military law.—Army Medical School, session of 1893-'94. By Maj. George B. Davis Judge-Advocate, U. S. Army.

Five lectures: Tuesdays in January, 1894.

SYNOPSIS.

Military discipline.
The origin, sources, and sanctions of military law.
The character and scope of the Articles of War.
Army Regulations, orders, etc.
The constitution, composition, and procedure of military courts.
The rules of evidence.
Civil and military offenses.
The fundamental principles of administration.

APPENDIX M.

Outline of three lectures on comparative anatomy, etc., delivered before the Army Medical School, Washington, D. C., in December, 1893, by Capt. J. C. Merrill, Assistant Surgeon, U. S. Army.

Lecture I.—The definition of the more important words used in comparative anatomy and biology. Outline of the theory of evolution, with explanation of the more important words and phrases used therein. Views of Lamarck, Darwin, and Weismann. Mention of more important reasons for acceptance of the theory of evolution, with illustrations of practical bearings of these subjects on medicine.

Lecture II.—Outline of classification of invertebrates and vertebrates. Special remarks on the tunicata and their larval development. Human osteology, with especial reference to anomalies which represent what is normal in lower animals such as the double malar bone and many others. Anatomy of horse, with diagrams illustrating its descent from 3 to 4 toed ancestors. Its anatomy with especial reference to the more important diseases.

Lecture III.—On the poisonous insects, etc., and venomous reptiles of the United States, the more important species being exhibited in alcohol or otherwise. The mechanism of the bite of venomous reptiles.

APPENDIX N.

Medical jurisprudence. Army Medical School, session 1893-'94. By Robert Fletcher, F. R. C. S., England.

Lecture I.—The rise and progress of medical jurisprudence. Dying declarations, how to be taken. Signs of death. The dead body. Putrefaction. Recognition.

Lecture II.—Asphyxia, including drowning, hanging, strangulation, and suffocation.

Lecture III.—Cold and heat. Lightning stroke. Wounds and injuries of head, chest, and localities generally. Gunshot wounds.

Lecture IV.—Personal identity. The living, the dead body, mutilated parts, bones and fragments of bones. Survivorship. Malpractice. Railroad accidents and claims.

APPENDIX O.

Parasites in man. By Dr. C. W. Stiles, Department of Agriculture. Two lectures and three laboratory demonstrations.

SYNOPSIS.

Lectures.—Parasitism. Mutualism. Commensalism. True parasitism. Pseudoparasitism and spurious parasitism.

Laboratory demonstrations.—Trichina spiralis and trichinosis. Examination of meat. Diagnosis from sarcocystis miescheri. Examination of stools for adult parasites. Diagnosis of intestinal parasites by microscopic examinations of fæces for forms of the eggs.

APPENDIX P.

Army Medical School, Washington, D. C.

Session of 1893-'94.

ORDER OF DUTIES.

DAILY, EXCEPT SATURDAYS, SUNDAYS, AND HOLIDAYS.

9 a. m. to 12 m.—Instruction in pathological laboratory.
1 p. m. to 2:50 p. m.—Instruction in chemical laboratory.
3 p. m. to 4 p. m.—Lectures.

SATURDAYS.

9 a. m. to 10 a. m. and as specially ordered, at Hospital Corps school of instruction, Washington barracks.—Practical instruction in litter and ambulance drill and first aid.

11 a. m. to 12:30 p. m., Fort Myer, Va.—Practical instruction in equitation.

The lectures will be delivered as follows:

Duties of Medical Officers.—Wednesdays, except November 22, 1893.
Military Surgery, etc.—Thursdays throughout the course.
Military Hygiene.—Fridays, except February 23, 1894.
Military Medicine.—Tuesdays, November 7 and 14, Wednesday, November 22, 1893, and Mondays, January 8 and 29, February 5, 12, and 19, 1894.

AUXILIARY COURSES.

Bacteriology.—Gen. Sternberg. Mondays, to include January 22, 1894.

Military Law.—Maj. G. B. Davis, Judge Advocate, U. S. A. Tuesdays in January, 1894.

Comparative Anatomy, etc.—Capt. J. C. Merrill, Medical Department, U. S. A. Tuesdays in December, 1893.

Medical Jurisprudence.—Dr. Robert Fletcher, F. R. C. S., England. Tuesdays in February, 1894 (except the 27th); also, Friday, February 23.

Parasites in Man.—Dr. C. W. Stiles, Department of Agriculture. Tuesdays, November 21 and 28, 1893.

INSPECTIONS BY MEDICAL DIRECTORS.

I desire here to place on record my appreciation of the value to the Medical Department and to the service generally of the inspections made by medical directors under the requirements of Army Regulation 1662. These visits to the military posts in their departments are of great importance to medical directors, for without the thorough knowledge acquired by personal observation and inquiry it would be impossible for these officers to discharge their duties intelligently. It is an everyday occurrence for communications relating to suggested changes and improvements to be referred to them for their views and action. Necessarily the value of their opinion in such cases depends on the accuracy of their knowledge of the sanitary conditions involved. In like manner the satisfactory performance of many of their duties depends on their intimate knowledge of the character and professional qualifications of their subordinates, which can be obtained only by personal contact. The Surgeon-General, in making allotments for the construction and repair of hospitals and hospital stewards' quarters and in making assignments of medical officers and others, has frequently to be guided by the views of medical directors who owe their more intimate knowledge of the facts in any case to the opportunities afforded by these inspections. There are, moreover, many articles of drugs, surgical instruments and appliances, microscopes and microscopical accessories, and chemical and bacteriological apparatus which require expert knowledge for their inspection. It is impossible for an officer who is not a medical man to act appropriately on such articles. It is impossible, also, for a nonmedical inspector to determine the professional qualifications of medical officers, or to appreciate the methods of treatment carried out in the hospitals, or the progress of the hospital corps members in pharmaceutical and other special work. Nor can the nonmedical inspector take the place of the medical director in advising the younger officers of the medical corps in difficult medical or surgical cases, or on mooted points of local sanitation which often involve large expenditures of money.

Col. Joseph R. Smith, medical director, Department of the East, remarks as follows on this subject:

> The visits prescribed by Army Regulation 1662 are necessary to inform the medical director and department headquarters and the Surgeon-General and War Department of the sanitary condition and needs of the posts, and on such subjects of administration of the Medical Department as, owing to their technical nature, are not thoroughly understood by other than medical men, as well as to give the medical director personal knowledge of his subordinates and enable him to give the instruction on certain subjects when needed.
>
> The necessity of such information is generally acknowledged. In many armies of civilized countries there are officers of rank and experience called medical inspectors. Their necessity was apparent in the U. S. Army during the war of the rebellion. They would now be necessary were it not that, owing to the peculiar service of the U. S. Army in peace, the work formerly performed by medical inspectors can be and is well performed by medical directors.

Careful study of the subject must lead to the conclusion that the visits of the medical director, prescribed by Army Regulation 1662, are among the most important and necessary features of administration of the Medical Department of the Army.

HOSPITAL CORPS.

The work of the Hospital Corps continues to demonstrate the wisdom of establishing this branch of the service, not only by the better care of the sick and wounded at our military posts, but by its efficiency in field work during the recent riots. The number of Hospital Corps members in service June 30, 1893, was: Hospital stewards, 122; acting hospital stewards, 79; privates, 589. The authorized quota consists of 146 hospital stewards, 95 acting hospital stewards, and 598 privates; but from motives of economy a continuous effort was made to have the current work of the corps performed with the smallest number consistent with satisfactory results. The appropriation for the year for the support of of the corps was $215,000. By carefully watching the numbers from month to month, so that the cost for each period should not exceed its proportion of the appropriation, the expense of the corps has been kept within this limit.

The following changes in the personnel took place during the year: Of 31 privates examined for the position of acting hospital steward 16 were found qualified and detailed, and 15 failed. Thirty-nine acting hospital stewards applied for examination for the position of hospital steward; of these 1 withdrew, 9 failed, and 29 were found qualified. Nine of the successful candidates made over 90 per cent, and 1 as high as 99.2 per cent. Owing to the smaller number of vacancies only 9 of the approved candidates have so far been promoted to the grade of hospital steward. The corps lost during the year—

	Hospital stewards.	Acting hospital stewards.	Privates.
By expiration of service	26	14	93
Discharge for disability	1		10
Discharge by order	5	3	67
Discharge by sentence of general courts-martial	2		18
Transferred to line of Army			28
Retired	2		2
Died	3		3
Deserted		1	12
Total	39	18	233

Its gain was—

By enlistments and reenlistments	120
Transferred from the line	144
Rejoined from desertion	7

These changes left the corps June 30, 1894, with 117 hospital stewards, 75 acting hospital stewards, and 585 privates.

Of the enlistments and reenlistments in the corps there have been—

Civilians, first enlistment	31
Civilians with previous service	20
Reenlistments from the line into the Hospital Corps	9
Reenlistments within the corps the day following discharge or within 30 days following	60

Of the number above noted as discharged by order, 34 were discharged under the provisions of General Orders, No. 80 of 1890. By the operations of this act, and of that forbidding the reenlistment of men after ten years' service, the corps lost many valuable men and an unusual number of assignments was made necessary to fill their places. Efforts have been made to recruit the corps as far as possible from civil life to save the transfer of men already enlisted into the line, and, as will be seen from the above numerical statement, a considerable number of the men were so obtained. At posts situated at great distances from the schools of instruction it is impossible, with due regard to economy of transportation, to supply men from the schools; vacancies at these posts have therefore been filled chiefly by transfers from the line.

The schools of instruction established at Fort Riley, Fort D. A. Russell, and Washington barracks have continued their highly valuable work, and although it has not been practicable, on account of necessity for economy in transportation, to secure the instruction of the corps at large at these schools to the extent that is desirable, they have been of great and essential service, especially in the case of those enlisted from civil life.

The training given at these schools covers all the duties which the Hospital Corps noncommissioned officer or private is liable to be called on to perform, viz, nursing and first aid to the sick and wounded; pharmacy and dispensary work; clerical work in the preparation of papers and reports; cooking, mess management, and such field work as pitching of tents and cooking and caring for the sick in the field. Instruction in riding and the care of animals to such of the men as had no previous training of this kind has not been practicable. as no animals could be obtained for this purpose. Seventy-four entered the schools during the year and 69 were transferred after a course of instruction lasting about four months. As stated in my last annual report, it is intended that the school shall be withdrawn entirely from Fort D. A. Russell as soon as accommodations are ready at Washington barracks, the transfer to this latter point having been commenced last fall. With two schools of instruction, at Fort Riley in the West and Washington barracks in the East, it is expected that the maximum benefit from their work will be secured. It should be noted that the schools are not only of great value as a means for the instruction and improvement of the men in their legitimate work as nurses, cooks, stewards, etc., but that by the gathering together of men under instructions at these points depots are formed from which assistance can be sent in case of emergency to any part of the country. During the present year the schools at Forts Riley and D. A. Russell furnished men for service with the detachments sent out to protect the railroads against the strikers.

It is believed that the character of the personnel of the Hospital Corps is undergoing improvement. Care is taken when a member applies for reenlistment to examine into his record, of which a full history is kept, and in no case, unless it is shown by previous service that he is sober, reliable and efficient, is his reenlistment authorized.

The following remarks concerning the corps show the impression which it has made on inspecting officers:

Col. Hughes, inspector-general, Department of the East, in a report of an inspection of Fort Hamilton, N. Y., under date of September 22, 1893, says: "Some of the men now in this detachment have gone through one of the schools of instruction. The advantages of these schools will be very apparent to any one who will take the trouble to inspect the individual members of this detachment."

Col. Page, medical director, Department of the East, in inspection report September 1, 1893, states: "There seems to be a growing interest in the management of the Hospital Corps. Medical officers take great care in drilling and instructing the detachments, and their work is bearing fruit."

Lieut. Col. Bache, medical director, Department of the Platte, under date of August 2, 1893, writes: "I am enabled by the inspection of detachments in this department to compare the efficiency and training of the men instructed at this school with the products of ordinary transfer at the posts, and the superiority of such men is constantly demonstrated. This favorable estimate is supported by the reports of most of the medical officers."

Some points of a minor character connected with the uniform and equipment of the corps are under consideration. These will probably be settled during the course of the present year if the observation and experience of our medical officers suffice to determine the changes that are desirable and proper for permanent adoption with a view to promote efficiency in active service.

The instruction of company bearers in stretcher drill and first aid has been continued during the year at all the posts, but, as has before been pointed out, under great difficulties owing to the impossibility of securing the regular attendance of the bearers and their frequent change of personnel. It has been suggested, and the suggestion has been acted on at some posts experimentally, to instruct each organization at the post in turn in these duties, under the idea that it would be desirable that as many men of each company should be acquainted with the stretcher drill and the principles of first aid as possible, so that in case of action or emergency there would be a certainty of having qualified bearers on hand.

RECRUITING.

The number of applicants for enlistment and reenlistment during the year was 20,332: White, 19,036; colored, 1,191; Indian, 105. Of these, 8,813 or 43.34 per cent were accepted, including 43.12 per cent of the whites, 44 per cent of the colored, and 77.14 of the Indians. Of the number examined 52.04 per cent of the whites, 53.65 of the colored, and 21.90 of the Indians were rejected; and 4.84 whites, 2.35 colored, and 0.95 Indian declined enlistment. In addition to these, 179 Indians were examined for enlistment as scouts, all of whom were accepted.

Causes of rejection.—Of the 20,332 men examined 10,568 were rejected on primary examination and 278 on secondary examination at the recruiting depots, a total of 10,846 or 53.34 per cent. A much smaller number than usual was rejected on account of general unfitness and unclassified causes—4.34 per cent of the total number examined, as compared with 11 per cent last year. Defective vision was as usual the most prolific cause of rejection, being present in 8 per cent of the whole number examined. Rejection was due to fraudulent enlistment, bad or doubtful character, or to unsatisfactory references in 4.80 per cent; to imperfect physique in 4.32; to deficient weight or height in 6.53; to minority in 2.62; to imperfect knowledge of the English language in 1.58, and to illiteracy in only 0.21 per cent.

Physique of accepted recruits and reenlisted men.—Age: Of 8,813 accepted—white 8,208, colored 524, Indian 81—486 were under 20 years of age, average 18.4 years; 4,309 were 20 to 24 years, average 21.9; 2,295, 25 to 29 years, average 26.7; 820, 30 to 34 years, average

31.8; 370, 35 to 39 years, average 36.9; 467, 40 to 49 years, average 43.7; and 66 over 50 years, average 52.5—the average age of the whole number being 25.9 years.

The average height of these men was 67.46 inches, the Indian taller than the white man and the latter taller than the negro; their heights being, respectively, 68.35, 67.47, and 67.14 inches.

The average weight was 144.42 pounds, the Indian the heaviest; the respective weights, Indian, negro, and white, being 151.98, 148.25, and 144.10.

The chest measurement also was largest in the Indian, expanding from 34.64 inches at expiration to 37.58 at inspiration, as compared with 34.31 and 37.16 as the average measurements of the whites, and 34 09 and 36.68 of the colored man. The average measurements of all the races were 34.30 and 37.13 inches. Capacity and expansibility of the chest increased with age from 33.25, the expiratory measurement, and 36.04, the inspiratory measurement of those under 20 years, to 35.33 and 38.05 of those over 50 years.

Of every hundred of these men 66.6 were native Americans (white. 59.75; colored, 5.93; Indian, 0.91), 9.54 were Irish, 9.21 German, 3.83 English, 2.14 Canadians, 1.58 Swedish, and 1.28 Danish.

IDENTIFICATION OF DESERTERS, ETC.

Since the outline figure card system has been in efficient operation, that is since July, 1890, 366 men have been identified, 137 as deserters, 121 as military convicts, and 108 as other cases of fraudulent enlistment. Fewer identifications were made during the past year than in any one of the three preceding years—76 in 1891, 97 in 1892, 133 in 1893, and only 60 during the past fiscal year. This diminution in the number of identifications is not to be attributed to any defect of the system. It is the natural consequence of its successful operation. When deserters, and others of the kind sought to be identified by the outline figure card system, become aware that detection is sure to follow their examination for enlistment they will naturally avoid the recruiting office. The object of the system is to keep the ranks free from these undesirable men, and it is accomplished by excluding them even better than by weeding them out.

In addition to the 366 cases mentioned there have been 142 identifications in the case of men not now in the service—deserters, 97; convicts, 18; others, 27.

The office has now accumulated the cards of a little over 9,000 men whom it is desirable to keep out of the ranks; and should any one of these men present himself for enlistment under an assumed name his identification would follow as soon as his outline figure card was received.

MEDICAL DEPARTMENT OF THE NATIONAL GUARD.

The only report on this subject received during the year was from Capt. R. J. Gibson, on duty with the troops who took part in the encampment of the Texas Volunteer Guard at Austin, Tex., in July, 1893. The march of the troops from Fort Sam Houston to the encampment was accomplished without sickness or accident, notwithstanding the excessive heat. During the encampment every courtesy was shown to the medical officers on duty with the volunteer guard. They were repeatedly invited to the camp of the regular troops to witness ambulance and litter drill, and the equipment of the field hospital was submitted for their inspection. At the request of Col. Ford, medical director of the guard, Capt. Gibson visited the camp of the guard with a hospital steward and ambulance and personally drilled some of the company bearers. There were present 1 medical director, 1 brigade surgeon, and 4 regimental assistant surgeons, all men of soldierly bearing and high professional qualifications. They were not supplied with medicines, instruments, or surgical appliances by the State; such articles of this kind as they had with them were their own personal property. Their camp hospital consisted of 4 hospital tents, 1 used as a dispensary, the others fitted up for patients. There was no ambulance with any of the organizations and no hospital corps; but certain enlisted men had been trained in litter-bearer duties, and these, if provided with ambulances, litters, and supplies, would have been able to have rendered efficient service in the field.

Although there has been but little official communication between the Medical Department of the Army and that of the National Guard the fourth annual meeting of the Association of Military Surgeons of the United States, held in Washington in May last, afforded an opportunity for personal contact and interchange of views between the members of the various organizations. This association was organized by the surgeons of the National Guard for cooperation in making the medical department of the military forces of each State thoroughly fitted to take its place in the field, either by itself or as a component of a national medical department. This office looked favorably upon the organization of the association as a medium by which it might keep *en rapport* with the medical corps of the State forces, and sent delegates to its meetings to ascertain the views and practice of these medical officers. The meeting in Washington was attended by the Army medical officers on duty in and near the city, and by several from neighboring posts in the Department of the East. Several others, who were prevented from being present by their duties or the distance of their stations, sent valuable papers on professional subjects to be read by proxy. Cols. Irwin and Alden, Lieut. Col. Forwood, Majs. Smart, Havard, and Hoff, and Capts. La Garde, Powell, Pilcher, Ewing, and Cabell took an active part in the proceedings. The Navy was represented actively by Medical Directors Gihon and Clebourne, and Surgs. Wise and Beyer. An interesting and valuable address was made by Prof. Senn, of Chicago, the president of the association, on "abdominal surgery on the battlefield," this subject being one in which his experience and surgical acumen have benefited suffering humanity and reflected credit on the profession of surgery in this country.

Among the many State officers who contributed materially to the success of the meeting may be mentioned Surg. Gen. Read and Surg. Egle, of Pennsylvania; Surg. Gen. Burrell, Medical Director Forster, and Assistant Surgs. Standish and Galloupe, Massachusetts; Surg. Gen. Cook, of New Hampshire; ex-Surg. Gen. Woodward, of Michigan; Medical Director Chancellor, of Missouri; Medical Director Almy, of Connecticut, and Assistant Surg. Clark, of Iowa. The association was pleased to elect me its presiding officer for the coming year, an honor which I regarded and accepted as a recognition of my official position, and which gratified me as demonstrating the closeness and strength of the bond uniting the Medical Department of the Army to that of the military forces of the States. The next meeting of the association will be held in Buffalo, N. Y.

HEALTH OF THE ARMY.

The health of the Army has differed but little during the year from that shown by the best of our Army medical records. The admission rate per thousand of strength present was 1,289.04, practically the same as the rate of the previous year, 1,270.42, a great improvement on the average annual rate of the previous decade, 1,424.20, and only slightly greater than the lowest rate, 1,247 (in 1887), ever furnished by our troops. The number of sick daily was 40.15 per thousand of strength. as compared with 39.60 during the preceding year. The number of days lost by sickness was equal to 14.7 for each member of the strength of the Army, as compared with 14.5 days during the preceding year and with 15.8 days for the average annual number of the previous decade. The rate of discharge for disability reached its lowest point this year, only 14.93 per thousand of strength, as contrasted with 18.35 during the preceding year and with 28.82 during the years of the previous decade. The lowest rate recorded prior to that of the present year was 17.23 in 1891. This satisfactory result is certainly due to the greater care taken in the selection of men for enlistment, for were it owing to the retention of disabled men the noneffective rate would give evidence of the fact. The deaths from all causes equalled a rate of 6.91 per thousand living, the lowest rate heretofore recorded having been 6.33 in 1889. Last year the rate was 6.44, and during the years of the previous decade 8.51. Excluding accidents and injuries the death rate was 4.01, which is practically the same as that of the year 1889, the year of least mortality, when the death rate from disease was 3.95 per thousand living.

The following tabulation shows the rates of the past year as contrasted with those of the previous year and with the average annual rate of the decade immediately preceding:

Army.	Mean strength.	Ratio per thousand mean strength.						
		Admissions.	Deaths.			Discharges.	Constantly noneffective.	Sick time for each soldier
			Disease.	Injury.	Total.			
								Days.
United States, 1893	25,287	1,289.04	4.01	2.89	6.91	14.93	40.15	14.7
United States, 1892	24,203	1,270.42	4.36	2.08	6.44	18.35	39.60	14.5
United States, 1882-'91	23,950	1,424.20	5.65	2.86	8.51	28.82	43.16	15.8

Injuries, as usual, take first place in the causation of the admissions to sick report, having caused 243.29 of the 1,289.04 admissions per thousand of strength during the year. Specific febrile diseases take second place, with a rate of 171.19, mostly due to influenza; diseases of the respiratory and the digestive system take third and fourth place, respectively, with 141.06 and 113.77 cases per thousand men; diarrheal diseases stand fifth, with a rate of 98.47, and malarial affections sixth. with 93.64.

Injuries caused also 7.92 of the 40.15 constantly disabled in every thousand men. Venereal diseases, as in former years, take second place as a disabling cause, having kept 5.41 men unfit for duty out of every thousand. Third place was taken by specific febrile diseases, 4.50, the chief factors being influenza and typhoid fever from the number and duration, respectively, of their cases. Then follow in order of prominence diseases of the respiratory system, 3.45; malarial diseases.

2.45; diseases of the digestive system, 2.09, and of the locomotor system, 2.02, the last mostly cases of muscular rheumatism.

The absolute number of discharges for disability was 413. Seventy-one of these were occasioned by accidents and injuries, including 21 cases of rupture; 53 by venereal diseases; 48 by insanity, epilepsy, and other affections of the nervous system; 44 by pulmonary consumption; 36 by diseases of the locomotor system; 32 by heart disease, and 24 by affections of the eyes.

The absolute number of deaths was 191. Eighty of these were deaths from violence or accident, including 25 from gunshot wounds and 21 by drowning. Pneumonia caused 18; pulmonary consumption, 17; typhoid fever, 16; kidney disease, 11; alcoholism, 10; heart disease, 6, and erysipelas 5.

The mean strength of the Army during the year was, according to the medical reports, 25,287 men: Whites, 22,429; negroes, 2,143, and Indians, 715. Both the admission rate and the rate of noneficiency of the white troops were larger than the corresponding rates of other races, but the death rate of the negroes and the death and discharge rates of the Indians were considerably higher than those of the white troops.

The Indians appear to have suffered more than the whites from mumps, erysipelas, venereal diseases, conjunctivitis and other diseases of the eye, consumption, pneumonia and glandular swellings; less than the whites from muscular rheumatism and hernia. The negroes suffered more than the whites from mumps, erysipelas, muscular rheumatism, and frostbite; less than the whites from venereal diseases. The whites suffered more than the other races from malarial and diarrheal diseases and alcoholism. The high death rate of the Indian was due to consumption and pneumonia, and his high rate of discharge to the effects of these diseases and of syphilis.

HEALTH OF THE MILITARY DEPARTMENTS.

The admission rates of the military departments varied from 1,578.77 per thousand of strength in the Department of Texas to 788.71 in the Department of the Columbia. The departmental rate of noneficiency had its maximum and minimum, 53.97 and 24.68, in these same departments. In the departments of the East and of the Missouri both of these rates were higher than the average of the Army, while in all the other departments they were lower than the average.

The death rate also had its maximum and minimum in Texas and the Columbia, ranging from 11.54 to 5.79 per thousand living. It was lower than the average of the Army only in the departments of the Columbia, Colorado, and Missouri.

The rate of discharge for disability ranged from 20.14 per thousand of strength in the Department of California, to 8.63 in the Department of the Platte. It was below the Army average only in the departments of the Platte, the East, and the Columbia.

Last year, as during that which preceded it, the Department of Texas had the worst and the Department of the Columbia the best medical record.

DEPARTMENT OF THE EAST.

This department, with a mean strength of 6,944 men, had an admission rate of 1,521.57, and 43.34 men constantly sick per thousand of strength, with a death rate and discharge rate, respectively, of 7.34 and 13.39. The high admission rate was not due to an unusual prevalence of any particular diseases, but to an equable increase of all diseases.

Of the posts in this department the two recruiting depots, Columbus barracks, Ohio, and Davids Island, N. Y., had the largest admission rates, 2,578.27 and 2,283.76, respectively. The former had also the largest rate of constant sickness, 92.16 per thousand of strength, the nonefficiency of the latter post having been relatively small, 48.44. The large admission rate of Columbus barracks was due to vaccinations, venereal diseases, and an unusual prevalence of catarrhs, pharyngitis, measles, and mumps. More than one-fourth of the nonefficiency was caused by venereal diseases. The redeeming feature in the sick report of this post is its low admission rate for alcoholism, 6.39, as compared with 33.97, the Army average. At Davids Island the increased admission rate was due to the vaccination of recruits and an excessive prevalence of catarrhs and bronchitis. The most objectionable feature of this depot is found in the defective construction of the men's quarters, which are roomy, open and unceiled, very comfortable in summer, but cold, drafty and uncomfortable in winter. Venereal diseases among these recruits did not exceed the average, and alcoholism was less common than in the Army as a whole. The excess of nonefficiency was due to the vaccinations.

Mount Vernon barracks, Ala., Fort Myer, Va., and Washington barracks, D. C., had admission rates of over 2000, with nonefficiency represented respectively by 48.70, 62.57, and 54.27. The large rate of the first mentioned post was due to an increased prevalence of most of the recorded diseases. At Fort Myer injuries and malarial diseases, with a somewhat increased prevalence of venereal affections, constituted the excess of the admmissions; malarial diseases caused a constant sick rate of 10.09, as compared with 2.45 in the Army generally, and injuries 18.88, as compared with 7.92. At Washington barracks the excess was occasioned by malarial and venereal diseases, the admission rate of the former being 853.66, as compared with 93.64 in the Army, and that of the latter 167.25, as compared with 73.08. At this post 13.50 men per thousand of strength were constantly sick with venereal diseases, and the autumnal epidemic of malarial fevers was such as to equal 11.80 men per thousand nonefficient throughout the year. Fort Barrancas, Fla., and Fort Porter, N. Y., had admission rates in excess of 1,800, and Fort Hamilton, N. Y., and St. Francis barracks, Fla., in excess of 1,700; but as many of the cases were of short duration the rates of nonefficiency were not as high as might have been expected from the number of the admissions. The excess of admissions at Fort Porter was due to catarrhs and alcoholism; at Fort Hamilton, to malarial and diarrheal diseases and catarrhs; at St. Francis barracks, to diarrheal and venereal diseases, rheumatism, and diseases of the integuments, mostly boils and abscesses; and at Fort Barrancas to malarial, diarrheal, and venereal diseases, alcoholism, and injuries. At the last-mentioned post catarrhs were infrequent.

Four of the posts in this department presented excellent records: Madison barracks, N. Y., with an admission rate of 600 per thousand of strength and a non efficient rate of 21.45, as compared with 1,289.04 and 40.15 in the Army as a whole; Fort Niagara, N. Y., with 666.67 and 17.38; Fort Thomas, Ky., with 907.61 and 26.10, and Fort Columbus, N. Y., with 1,088.08 and 38.89.

Most of the posts that have not been mentioned specially had higher rates than the Army average. Fort Monroe, Va., for instance, has 1,379.01 and 46.42, and Fort McPherson, Ga., 1,391.41 and 54.17. West Point, N. Y., had an admission rate of 1,396.87, but the nonefficiency was only 26.00, the excess of admissions were mainly catarrhs, which the small nonefficiency is attributable to the freedom of the garrison from venereal diseases. At Willets Point a similar excess of admissions is referable to alcoholism; but the medical record of this post has improved considerably during the past year.

DEPARTMENT OF THE MISSOURI.

This department, with a strength of 4,169 men, had an admission rate of 1,376.59, a nonefficient rate of 41.17, a death rate of 6.48, and discharge rate of 16.07. These slightly increased rates were occasioned by malarial and diarrheal diseases. The cavalry-recruiting depot at Jefferson barracks, Mo., had the highest admission rate, 2,004.13, but its noneffective rate, 50.59, was less than that of Fort Reno, Okla., 59.28, with an admission rate of 1,734.04. Malarial fever, mumps, vaccination, diarrhea, and contusions and sprains caused the high rate among the recruits, who were relatively free from the effects of dissipation. At Fort Reno the excess of admissions was due to malarial and diarrheal diseases and injuries, with typhoid fever contributing materially to nonefficiency. At Fort Supply the rates were 1,497.74 and 44.75, due chiefly to diarrhea and bronchitis. Fort Leavenworth, Kans., and Fort Sill, Okla., had rates above the average; those at the one occasioned by mumps and diarrhea, at the other by venereal diseases. At Fort Riley, Kans., and Fort Sheridan, Ill., the number constantly sick was relatively less than in the Army as a whole, and at Forts Wayne and Brady, Mich., the admission rate also was low.

DEPARTMENT OF DAKOTA.

In this department, with a strength of 3,505 men, the rates were as follows: Admission, 1,092.15; noneffective, 35.09; death, 7.13; discharge, 16.83. The relative infrequency of malarial and diarrheal diseases, venereal affections, and alcholism was the cause of these low rates of admission and nonefficiency.

Forts Keogh, Mont., Yates, N. Dak., and Meade, S. Dak., are the only posts in this department where the rates exceeded the average of the Army, their admission and noneffective rates being for the first 1,633.99 and 52.11; for the second, 1,520.60 and 44.02, and for the third, 1,500 and 51.76. At Fort Keogh the infrequency of malarial fevers was offset and the high admission rate caused by the prevalence of influenza and diarrhea. At Fort Yates the infrequency of venereal diseases and malarial fevers was more than offset by a relative increase of injuries, influenza, colic, and constipation. At Fort Meade only malarial diseases were infrequent, while influenza, diarrhea, and injuries summed up the excess of disability.

Fort Custer, Mont., had the unusually low rates of 333.33 and 13.17; and but for some cases of influenza the rates of Fort Yellowstone, Wyo., would have been equally low—as it was they were 520.00 and 20.77. Fort Sully, S. Dak., had 725.15 and 17.67; Fort Missoula, Mont., 773.87 and 18.16; Fort Buford, N. Dak., 968.42 and 34.27; Fort Snelling, Minn., 979.17 and 39.41, and Fort Assinniboine, Mont., 1,182.88 and 31.29.

DEPARTMENT OF THE PLATTE.

In this department, with a strength of 2,665 men, the rates were: Admission, 1,178.24; noneffective, 34.26; death, 8.26; discharge, 8.63. Malarial fevers and diarrheal diseases were relatively infrequent, while rheumatism, catarrhs, and alcoholism were somewhat more common than in the Army as a whole.

The post having the highest rates was Fort McKinney, Wyo.; admission, 1,601.45; noneffective, 54.36, caused by the excessive prevalence of rheumatism, catarrh, boils and abscesses, injuries, and alcoholism and the duration of venereal cases; other diseases prevailed at the Army rates excepting malarial affections, of which there were practically none. Not one of the other posts in the department had the noneffective rate higher than the average, although Fort Niobrara, Nebr., and Fort Sidney, Wyo., had admission rates somewhat in excess, the former 1,367.61, the latter 1361.81. Fort Omaha, Nebr., had the best record; admission, 750.53; noneffective, 28.01; and Fort D. A. Russell followed, with 1,091.10 and 34.84. In the rates of the former post are included those chronic cases sent from other posts in the department for observation by the medical director prior to discharge.

DEPARTMENT OF TEXAS.

In this department, with a strength of 1,733 men, the rates were: Admission, 1,578.77; noneffective, 53.97; death, 11.54; discharge, 16.[illegible] The excess of disability was due to all causes except injury, and notably to malarial and diarrheal diseases and epidemics of influenza and dengue.

With the exception of the admission rate of Fort McIntosh, the rates of the posts in this department exceeded the average of the Army. Fort Bliss had the highest admission rate, 2,200, mainly due to influenza and malarial fevers, and these were the cause of nearly one-half of the nonefficiency of 46.89. Fort Clark followed, with an admission rate of 2,165.60, and the highest rate of nonefficiency, 79.[illegible] the excess in both rates resulting from malarial and diarrheal diseases and affections of the digestive system. The rates at Fort Ringgold were nearly as high as at Fort Clark, but an epidemic of dengue, 1[illegible] cases in a strength of 149 men, was the cause of the unusual sickness. Fort Brown was similarly affected, 69 cases in a garrison of 83 men. The rates at Fort Sam Houston were raised a little above the average by influenza. Fort McIntosh had the smallest admission rate, 1,218.[illegible] but its nonefficiency was high, 65.62, on account of a number of cases of typhoid fever.

DEPARTMENT OF THE COLORADO.

Average strength, 3,458 men; admission rate, 1,190.57; noneffective, 36.29; death, 6.36; discharge, 15.33. The sickness in this department was of the same general character as that of the Army, but with the prevalence of all diseases slightly diminished.

Of the posts Fort Wingate, N. Mex., Fort Grant and Whipple Barracks, Ariz., had rates above the average. Admission, 1,564.10, 1,532.[illegible] and 1,336.21, respectively, and noneffective 48.68, 50.65, and 46.66. At the first the excess was caused by rheumatism, bronchitis, and injuries, at the second by malarial fevers and injuries, and at the third by malarial fevers and bronchitis. At Fort Huachuca, Ariz., and Fort Marcy, N. Mex., the rates did not differ much from those of the Army; at the other posts they were smaller. Fort Stanton, N. Mex., gave the best record, 757.01 and 18.56; Fort Bayard, N. Mex., followed with 851.19 and 30.89, and San Carlos, Ariz., with 897.14 and 32.86.

Fort Apache, which two years ago had unusually heavy rates of sickness, has now rates that are considerably below the average of

Army. The medical director, in a report of an inspection of this post recently made, speaks of its general sanitary condition as perhaps superior to that of any post in the department. The whole occupied area is thoroughly policed and kept in the nicest order. "The system of preventive sanitation is carried out fully, and this post may now be considered one of the very healthy posts of the department, showing the wisdom and result of careful sanitary attention. The commanding officer takes constant personal interest in this matter and cordially seconds the medical staff in all matters pertaining to their department."

DEPARTMENT OF CALIFORNIA.

Average strength, 1,390 men; admission rate, 975.54; noneffective, 34.51; death, 7.91; discharge, 20.14. Except venereal diseases all causes of disability had in this department smaller rates than the average of the Army. The post on Alcatraz Island had only 694.91 admissions and 18.37 noneffective per thousand of strength; Benicia barracks, 792.45 and 23.43; Angel Island, 826.09 and 40.04, and the Presidio of San Francisco 1,189.80 and 39.17.

DEPARTMENT OF THE COLUMBIA.

Average strength, 1,382 men; admission, 788.71 per thousand; noneffective, 24.68; death, 5.79; discharge, 13.75.

Fort Walla Walla, Wash., was the only post in this department which had rates higher than those of the Army. Its admissions were 1,502.65; nonefficiency, 57.29, chiefly due to venereal diseases and influenza. All the other posts had exceedingly low rates, as Vancouver barracks, Wash., with an average strength of 440 men, 518.18 admissions, and 15.06 nonefficiency; Fort Canby, Wash., 698.11 and 22.93; Fort Spokane, Wash., 659.57 and 27.22; Boise barracks, 798.17 and 16.97; and Fort Sherman, Idaho, 781.76 and 23.63.

HEALTH OF INDIVIDUAL POSTS.

Omitting from consideration detachments, arsenals, and small posts, the recruiting depots, Columbus barracks and Davids Island, in the Department of the East, had the largest admission rates. The rates of the former have always been high, and are due to the location of the depot within the limits of a city. Reference has been made to this in previous reports from this office. During the past year one-third, 333.88 per thousand of the strength present, was affected with venereal diseases, and the disability caused by this was equal to 24.08 men per thousand of strength constantly sick during the period devoted to perfecting the physique of the recruits and their education as soldiers. At Davids Island the admission rate has been steadily increasing for the past five years from causes that are not shown clearly in the reports.

Outside of the depots for recruits the military posts having admission rates in excess of 2,000 per thousand of strength are Forts Bliss and Clark, Tex., Mount Vernon barracks, Ala., Fort Myer, Va., and Washington barracks, D. C. The occupation of the new post of Fort Bliss will no doubt lessen the malarial rate hereafter in this locality. The contamination of the spring-water supply by surface inflow is believed to be the cause of the autumnal fevers at Fort Clark, where the use of distilled water is expected to suppress their prevalence. The reports do not indicate why the rate at Mount Vernon barracks is so high, unless on the allowable assumption that the dissipation which gives large rates for alcoholism and venereal diseases increases the susceptibility to all other causes of disability. At Fort Myer and Washington barracks the increased rates result from autumnal fevers; at other seasons these two posts have excellent records.

The noneffective per thousand of strength was greatest at Forts Clark, Ringgold, McIntosh, Myer, and Reno, due at Ringgold and McIntosh to dengue and typhoid fever, respectively, and at the others mentioned to the severity of the autumnal fevers.

Some of the minor posts, such as those at Sandy Hook, N. J., Eagle Pass, Tex., and Poplar River, Mont., had large rates.

The posts having the best records for the year are Fort Custer, with 333.33 admissions and 13.17 noneffective per thousand of strength; Vancouver barracks, with 518.18 and 15.06; Fort Yellowstone, with 520 and 20.77; Madison barracks, with 600 and 21.43, and Fort Niagara, with 666.67 and 17.38.

Continuing to omit the minor posts from consideration the death rate was greatest, 33.90, at Alcatraz Island, and 28.25 at Mount Vernon barracks. At the one 4 deaths occurred, at the other, 5; but the largest absolute number of deaths, 7, was reported from each of two posts, Columbus barracks and Fort Custer. Four of those at the latter post were caused by injury.

The rate of discharge for disability was greatest, 50 per thousand men, at Fort Barrancas, where 6 men were discharged; but the largest absolute number was 16 at each of two posts, Forts Leavenworth and Meade.

THE PREVALENCE OF SPECIAL DISEASES.

SPECIFIC FEBRILE AND ACUTE INFECTIOUS DISEASES.

The statistics of these diseases, including erysipelas, tonsillitis, and cases reported as typhomalarial fever, for the past year do not differ materially from those for the year preceding it. The admission rate was 171.19, of which 81.15 was credited to influenza, 49.91 to tonsillitis, and the remainder chiefly to mumps, measles, dengue, diphtheria, and enteric fever, the whole giving a constant sickness of 4.59, of which 1.[illegible] was occasioned by influenza and 1.19 by enteric fever. The death rate was 1.01, of which .62 represents the fatal cases of the last-named disease.

Cerebro-spinal fever.—Two cases, both white, were reported, one fatal in its issue at Fort Riley, Kans.; the other favorable at Fort Porter, N. Y.

Chicken pox.—Twelve cases were reported among enlisted men, 9 at Fort Monroe, Va., where smallpox was present during the year, 2 at Jefferson barracks, Mo., and 1 at Fort Logan, Colo. Several cases occurred among children at Fort Yates, N. Dak., and it is not unlikely that there may have been unrecorded cases among civilians at other posts.

Dengue.—An epidemic of this disease prevailed at Forts Ringgold and Brown, Tex. At the former post the epidemic was prolonged during the months of July, August, and September. The infection was imported from the adjacent town of Rio Grande by the daughter of an officer on her return from a visit to a Mexican family; but its spread in this instance was confined to the members of her own family. The first case to appear on sick report occurred in a Seminole Indian scout who had just returned from courier duty along the river, where the disease was extensively prevalent; but there was no spread among the troops until the garrison was augmented by a squadron of cavalry from Ok homa. These men became immediately affected, and it was not until many of them had been taken sick that the fever began to appear among the men of the original command. One hundred and fifty-four cases were reported in the garrison, numbering, including Indian scouts, 178 men; and most of those whose names do not appear on sick report were affected, but not so seriously as to render excuse from duty needful under the circumstances. Most of the women and of the civilian employés and all the older children were affected; children under 6 years of age escaped attack. In some instances the fever was developed within a few days of the first exposure to infection; but in others six or eight weeks intervened between the first exposure and the development of the disease. The attack was ushered in with malaise, vertigo, and headache lasting from a few hours to one or two days, when an accession of fever was noted, the temperature rising to anywhere from 100° to 105° F., and coincidently were developed the pains which have caused the name breakbone fever to be applied to this affection; but the muscular system as well as the bones and joints, was involved in the pains. An urticarious or papular eruption was observed only in a few exceptional cases. Nausea, hebetude, and insomnia characterized the course of the disease, which ordinarily lasted from four to six days. None of the antipyretics proved effectual in reducing the abnormal temperature. Acetanilid, antipyrin, phenacetin, quinine, and salicin were tried thoroughly. Evidently the disease was self limited. The routine treatment finally adopted was: (1) Control of the bowels by calomel and bicarbonate of soda in constipation, or by camphor and opium in diarrhea. (2) Rest in bed—the most important factor in the treatment. Those admitted to hospital usually made a prompt recovery, while those treated in quarters, owing to lack of hospital accommodations, dragged along slowly, and in many instances had to be admitted to hospital later. It was observed also that those who gave up promptly and took to bed on the appearance of the fever made a more rapid recovery than those who refused to succumb until forced to do so by the advance of the disease. (3) Quinine in tonic doses, rather as a placebo during the active stage, and with iron and strychnine as a tonic during the convalescent period. (4) Morphine hypodermically or chloral and potassium bromide by the mouth, to control insomnia. Under this treatment patients made an entirely satisfactory recovery.

At Fort Brown the epidemic prevailed during the months of June, July, and August, introduced from the city of Brownsville, where it probably existed during May. The only difference in the disease as presented at this post was the frequent presence of a fleeting erythematous eruption during the febrile period. Young children were exempted from attack.

Diphtheria.—Twenty cases were reported, 16 at one post, Fort Yates, N. Dak. At this point the disease appears to have effected a lodgment after its introduction last year among the children. Two outbreaks have occurred since then, the first in September, the second in November. The primary case of the first group, in the person of a soldier of Company A, Twelfth Infantry, was malignant, with thick gangrenous patches, and fatal on the third day. The hospital corps attendant who had charge of this case then became affected, and immediately afterward the third case, also from Company A, Twelfth Infantry, was developed. The company was sent into the field and its barracks fumigated with sulphur, scrubbed, and dried. No other case occurred at this time among the infantry soldiers, but an officer belonging to Company F, Eighth Cavalry, became affected. On November

22, a case was taken from the infantry barrack room and 10 other cases were afterward reported. This barrack is an old one-story low-ceiled log house. The first case of the first outbreak was the only fatal one.

A malignant, fatal case occurred in a child at West Point, N. Y. Strict quarantine measures were adopted and continued for several days after the termination of the case, when the bedding, clothing, rooms, and furnishings of the family were thoroughly disinfected. No extension of the disease took place.

Enteric fever.—One hundred and fifty-nine cases of this fever occurred, and 3 cases reported as typhomalarial; 16 of the former and 1 of the latter died. Fort McIntosh, Tex., reported 18 cases; Whipple barracks, Ariz., 16; Fort Reno, Okla., 14; Fort Monroe, Va., 8; Fort Leavenworth, Kans., 7; Jefferson barracks, Mo., Fort Sill, Okla., Fort Robinson, Nebr., and Madison barracks, N. Y., 5 each; the remaining 79 cases distributed among 39 posts.

Sporadic cases of this fever at posts where the sanitary conditions are good were no doubt imported; this is known to have been the case in certain instances. In others the prevalence of the fever in adjacent civil communities accounts for the presence of occasional cases among the troops. It is only when several cases are developed in rapid sequence at a post that local causes are assumed to be concerned. In most of such instances, as at Forts Reno and McIntosh, Tex., the use of impure river water is considered the probable cause. The fever occurs at a time when the impurity of the water is greatest, and is associated with low remittents. For many years past no case of enteric fever has occurred at Fort Reno in the large part of the population of the post which drinks exclusively the water from Caddo Springs.

During the year an epidemic occurred at the Fort Leavenworth military prison. Twenty-seven prisoners and one member of the guard became affected. In July, 3 cases; in August, 10; in September, 9; in October, 5; and in November, 1. The mean daily strength of the prisoners was 526, of the guard 112. On the appearance of the first 3 cases the general water supply from the Missouri River was considered to be the source of infection. No case of the disease had occurred at the post of Fort Leavenworth since the previous February, although a number of cases had appeared in the city of Leavenworth, the waterworks of which supply both post and prison. But the almost simultaneous appearance of so many cases in August among different classes of prisoners working at various points and at different kinds of work, added to the fact that no case had occurred at the post, indicated that some local cause or condition other than the water supply existed at the prison to give rise to the epidemic. The length of time the affected prisoners had been in prison excluded the possibility of infection prior to arrival. One man a few days before his admission into the hospital had undergone fifteen days confinement in the solitary cells on restricted diet. Infection from man to man was excluded by the fact that the patients came from detachments working at different points and quartered in different buildings. Prisoners, as a rule, present themselves for treatment on the slightest pretext, and at this time especial care was taken to admit all to hospital who presented any symptoms of the disease. This also negatives the idea of infection from each other. There was no overcrowding at the time and the ventilation was considered satisfactory. There could be no reason for suspecting the food, as the prisoners had no means of obtaining milk or other uncooked articles of diet. The sewerage system of the prison is unsatisfactory, but after due consideration of its defects it was considered that these could not account for the typhoid outbreak. It a process of exclusion the ice supply fell under suspicion, and investigation showed the likelihood of its contamination by sewage. The ice for the post was obtained from a pond on the reservation, but that for the prison was cut from a cove formed by the jutting out of a sand bar into the river. An open sewer ran near the cove with natural drainage toward it. Three or four weeks after the disuse of this ice the epidemic subsided.

Prisoners generally drink excessive quantities of ice water, due in some cases to the heat in the shops and the character of the labor on which they are employed, causing free perspiration, and also, no doubt, because frequent trips to the water bucket is a diversion and relief to them. To this habit, and their tendency to overeat, which renders them prone to gastro-intestinal disorders, the post surgeon referred the heavier incidence of the disease on the prisoners than on the members of the guard.

Influenza.—The outbreaks of influenza occurred in November and December. Many posts were visited, particularly Forts Assinniboine and Keogh, Mont.; Forts Sam Houston and Bliss, Tex.; Fort Leavenworth, Kans.; Fort Sheridan, Ill.; Fort Niobrara, Nebr.; Fort Yates, N. Dak.; Fort Huachuca, Ariz.; Presidio of San Francisco, Cal.; Fort Walla Walla, Wash.; Fort Monroe, Va., etc. At first a few cases were developed which suggested a different type of pharyngeal or bronchial affection than that due to ordinary exposures. Immediately afterwards the number on sick report increased so suddenly and rapidly as to leave no doubt of the epidemic character. The disease usually manifested itself by chilly sensations in the afternoon. Next morning frontal headache and febrile action were developed with muscular pains and cough. The evening witnessed all these symptoms intensified, with the temperature at its highest point, 101 to 104. The muscular pain and tenderness were greatest about the chest; cough, when present, was insignificant in comparison with the severity of the chest pains. Conjunctival and pharyngeal congestion was usual. On the morning of the third day the temperature was nearly normal; in few cases did it fail to reach this point in the evening. On the fourth day the patients in most cases were well, or with merely a sense of lassitude or muscular pain remaining. Grave complications or sequelæ were uncommon.

Measles.—The largest number of cases of measles, 65, was reported from the recruiting depot at Columbus barracks; the other depots, Jefferson barracks, Mo., and Davids Island, N. Y., had but 1 each. At Fort Monroe, Va., 61 men became affected. The disease was present at 20 posts other than those just mentioned, but at none was there such a prevalence as at the recruiting depot and Fort Monroe. The whole number of cases at the 24 affected posts was 204. Measles appeared among the children at several posts without spreading to the men in barracks. At camp at Eagle Pass, Tex., the cases—4 in number—which occurred were in the family of the post surgeon. Generally the disease was introduced from neighboring settlements, but in a few instances, as at Fort Douglas, Utah, it was brought by a recruit from Columbus barracks.

Mumps.—Two of the recruiting depots, Columbus and Jefferson barracks, reported 119 of the total of 337 cases reported from all the posts. The infection was probably spread from these depots.

Scarlet fever.—Only 3 cases of this fever were recorded—2 at Fort Leavenworth, Kans., and 1 at Fort Pembina, N. Dak. Centers of infection appeared among the children at Whipple barracks and Forts Assinniboine, McHenry, and Monroe, but by proper medical supervision the disease in these instances was restricted to the house in which the infection made its first appearance. As illustrating the methods of post surgeons in such cases, the following by Lieut. G. M. Wells, assistant surgeon, Fort Grant, Ariz., is submitted:

On November 15 two cases of scarlet fever were discovered in the hotel at this post. They were both in children, aged 2½ and 10 years, respectively, members of a ranchman's family that had been visiting in the East, and were on their way home at the time they stopped here. Both cases were mild, and in a few days were removed to their home some distance from the post, although not entirely well at the time. After reaching home a third child, which includes all the children of the family, was taken sick with the same disease, but so far as I know it has not been transmitted to other families. Immediately upon the arrival of the family at the post I was sent for and made a diagnosis of scarlet fever. I then forbade any member of the family to go out of doors for any purpose whatever except the husband to go to the post hospital for such things as I wanted to use in the treatment, and gave positive orders that no one should go near their room, which was in a detached building about 20 feet from the main hotel building. Having taken this precaution, I went immediately to the post commander and laid the matter before him. There being no other place on the post for them to go, and having already infected the room in the hotel, it was decided to let them remain there. A circular was issued by the post commander setting forth the facts, and prohibiting all children from going near the hotel. It also directed all persons about the hotel to comply strictly with the directions of the post surgeon in the matter. A jar of chloride of lime was taken to the hotel and a large quantity of solution, 4 ounces to the gallon, was prepared. Sputum, urine, and fæces were collected in vessels containing this solution, and were required to stand six hours before being poured into the privy vault. There was no vomiting after the cases came under my care. All clothes that were worthless were burned at once, and those that were of value were left in the room for disinfection. The meals for all members of the family were placed near the door, and when the party carrying them was gone the husband would get them and take them inside where they were served. As soon as they were through eating all scraps were thrown into a vessel containing disinfecting solution, while all the dishes and trays were thoroughly washed in it and immediately placed outside the room and were carried away by other parties. All this was kept up until the family left, when I set about the work of disinfecting the room and contents. Large tin vessels were procured, into which was poured the standard solution of chloride of lime. All soft articles, except two felt mattresses and two pillows, were placed in these receptacles, where they were left twenty-four hours. All the woodwork of the room and every piece of furniture was thoroughly scrubbed with the standard solution. This done, all the cracks were carefully stopped, drawers pulled half way open and 10 pounds of sulphur burned in the room, which contained about 2,100 cubic feet of air space. At the end of twenty-four hours the smell of sulphur was so strong that one could not breathe in the room. The door and windows were then opened and everything carried into the open air. The soft fabrics were now taken out of the solution and sent to the laundry. The furniture was left out two days and nights and the door and windows left open during that time. During the fumigation of the room and the airing of the furniture one mattress and two pillows were suspended, while one mattress was left lying on a woven wire spring. At the end of two days the room was thoroughly cleansed again and the furniture put in place. I do not think there is any danger of contagion from this room at all. I did my work most thoroughly, and I believe the family, which is a very intelligent one, carried out my instructions strictly. If other cases should develop it will be due to the dilapidated condition of the room, which is adobe, rendering it difficult of disinfection, and not to inefficiency of the methods of prevention that have been employed in the case; besides, the dryness of the atmosphere and the extreme heat of the sun, even in the month of November, are potent factors in the destruction of disease germs.

Smallpox.—Three cases were reported, 1 each at Fort Monroe, Va., Fort Hamilton, N. Y., and in the field; none fatal. No extension of the disease from any of these cases was permitted.

Tonsillitis.—Cases making a total of 1,262 were reported from nearly every military post, the largest number from any one post being 58, 55, and 50, respectively, from Jefferson barracks, Mo., Fort McPherson, Ga., and Fort Snelling, Minn. As was stated in my last annual report, it is impossible to say what proportion of these consisted merely of a local inflammation of a portion of the digestive tract and what proper tion was due to a specific cause entitling the cases to be regarded as belonging to the class now under discussion; but remarks are so frequently appended to sanitary reports indicating the connection of these cases with defective drainage and sewerage, polluted soils, and neglect of proper ventilation of dormitories, that it would seem advisable from the standpoint of practical sanitation to regard them as more intimately associated with the specific febrile and acute infectious diseases than with the diseases of the digestive system.

Yellow fever.—The only recognized danger from this disease during the past year threatened the garrison of Fort Barrancas, Fla., through the invasion of Pensacola, Fla., where early in August two deaths were acknowledged by the board of health to have been occasioned by this fever. The troops were ordered to Fort McPherson, Ga., leaving Fort Barrancas August 12, and returning November 17, after the occurrence of frost gave assurance of security against epidemic sickness.

DIARRHEAL DISEASES.

The admission rate for diarrheal affections was 98.47, or somewhat less than that of the previous year, 110.84. Of the total rate as just stated, 94.99 was due to diarrhea, including cholera morbus, and only 3.48 to dysentery. The average duration of each case of the former was 3.2 days; of the latter, 12.9 days. On account of the short duration of the cases the nonefficiency caused by them was relatively small, about 1 man (0.96) constantly sick out of every thousand. The absolute number of dysenteric cases was 88, of which only 1 died. No case of diarrhea proved fatal. The post having the highest rates for these diseases was Fort Clark, Tex., with 455.42 admissions, and 5.16 constantly noneffective per thousand of strength.

MALARIAL DISEASES.

The rates for malarial diseases were increased during the past year to 93.64 admissions and 2.45 noneffectives per thousand of strength from 63.75 and 1.76 during the previous year. Of 2,368, the absolute number of cases, 1,622 were intermittents and 746 remittents and other malarial diseases. The average duration of the intermittents was 6.2 days; of the remittents 15.9 days; of the others, mostly continued malarial fevers, 22.3 days. The whites suffered more than the negroes, their respective admission rates being 94.87 and 47.60; but the only fatal cases were among the latter, 2 cases of continued fever at Fort Bayard. N. Mex. The largest number of admissions, 853.66, was reported from Washington barracks, D. C., giving a constant sick rate of 11.80. Most of this sickness occurred in the autumn months. The endemics at this post have been attributed by all the medical officers who have investigated the subject to the reclamation of the Potomac flats, work on which is now in progress, and to the proximity of the James Creek Canal. The highest rate of nonefficiency, 19.53, was reported from Fort Clark, Tex., where, although the admission rate was only 334.39, the preponderance of remittent and continued cases occasioned the high rate of nonefficiency. It is hoped that an improved water supply will lessen the rates at this post hereafter. For several years past it has been remarked that the flooding of the spring by surface water during heavy rains has always been followed at an interval of a few days by the entry of a series of cases of remittent fever on the sick report. Fort Myer, Va.; Jefferson barracks, Mo.; Fort Bliss, Tex., and

Fort Hamilton, N. Y., also had high rates for malarial fevers. The post surgeon at Fort Sill, Okla., Capt. W. Fitzhugh Carter, in one of his sanitary reports, urges the use of distilled water from the ice machine aerated by passing through a homemade filter. From his experience and observation at this post he concludes that the germ of malarial disease is conveyed from the soil by surface or subsoil water to the streams, springs, and wells in the vicinity, and that therefore any water not specially treated with a view to sterilization is likely to be harmful. "There is," he says, "almost conclusive evidence that the water of the streams in this section of the country is a concentrated malarial poison, and at certain seasons of the year will give rise to malarial fevers in a large percentage of those who drink it," and he looks to the use of distilled water for the same beneficial results that have already been obtained at Fort Brown, Tex. At a post, Fort Niobrara, Nebr., from which malarial fevers are seldom reported, there occurred in September and October 26 cases, 17 intermittents and 9 remittents. There was no recognizable local cause of malarial disease in the vicinity, and no case of such disease among the citizens of the neighboring town of Valentine; but as on investigation the post surgeon found that many of the affected men were recruits recently from Jefferson barracks, and all of them had suffered from malarial fever at some previous period, he regarded the unusual outbreak of sickness as recurrences of malarial affections in susceptible persons under influences which failed to develop disease in the garrison generally.

At Fort Huachuca during the month of August a malarial outbreak was occasioned by unusual meteorologic conditions. Forty cases of remittent fever occurred during the month, and at its close new cases were arising daily. The rainfall had been the greatest ever recorded—9 inches. The ground became thoroughly saturated, a phenomenal growth of vegetation of all kinds was developed, and mosquitoes made their appearance for the first time in the history of the post. Cellars became flooded, but the evils arising from this were remedied as far as possible by prompt attention.

TEXAS FEVER.

Lieut. C. C. McCullough, who has studied Texas fever from El Paso to Brownsville, is inclined to view it as a subacute sunstroke, or a condition in which there is a partial inhibition of the functions of that part of the sympathetic nervous system which regulates the animal heat. His report is as follows:

I have seen in this region typical and atypical cases of the following varieties of continued fevers: (1) typhoid fever; (2) malarial remittent fever; (3) simple continued fever, or febricula; (4) catarrhal fever, or influenza; (5) dengue fever; and in addition, (6) Texas fever, which I believe to be distinct in etiology from all the others.

To take up the consideration of the above fevers seriatim:

1. Typhoid fever.—(A) In Texas fever there is, so far as I have been able to observe, no discoverable connection with sources of typhoid infection. Contrary to the experience of Capt. William B. Davis, Medical Department, U. S. Army, quoted below, those cases I have seen have not been in soldiers from any particular barracks or mess, nor confined to those living to the leeward of any particular drain or other probable source of infection of that class. The complaint at the places and times when it is prevalent affects men indiscriminately living in various parts of the post. Though I have heard varying opinions from many officers on this complaint, the only literature available to me on the subject of Texas fever is a report by Capt. William B. Davis, Medical Department, U. S. Army, in the report of the Surgeon-General of the Army for the year ending June 30, 1893. He says:

"In the summer of 1892, while post surgeon at Fort Clark, Tex., 36 or 40 cases of so-called Texas fever, a hybrid in symptoms between typhoid and malaria remittent fever, though not amenable to the treatment of either, came under my care. In every instance the disease was found only among those men whose barracks were to the leeward of an open drain (about 50 yards distant) *and who did fatigue duty in the broiling sun* [the italics are mine—C. C. M.]. That this drain was a potent factor in producing the disease is conclusively established by the fact that there were from 10 to 15 laundresses' quarters on the windward side of the drain (occupied by married soldiers and their families) and not a single case appeared among them, nor did any case appear in the officers' row, which is also to the leeward of the drain, but at such a distance that the poison would necessarily be so diluted as to be innocuous. * * *

That the drinking water was not to blame is, I think, proven by the fact that the same water used by the men in barracks was also used by the families of the officers and of the married soldiers. * * * Again I had a considerable practice in the adjacent town of Brackettville, and though their sole water supply was the same as that used by the post, not a case of fever occurred."

At no post has it seemed possible that any cases were due to an infected water supply; in some posts, as at this one, no water being used for drinking purposes except condensed water. The fact that Capt. Davis' cases appeared in the barracks and not in the married soldiers' or officers' quarters, I do not believe to be due to the drain, but rather, as stated below, to the hot climate in conjunction with the "fatigue duty in the broiling sun," which latter was not done by the officers or their families, the families of married soldiers, nor probably to a great extent by the married soldiers themselves, these usually being in large proportion noncommissioned officers. If the suspected poisonous substance in the drain was not diluted by the air in 50 yards conveyance, it seems likely it should have reached in some degree the officers' quarters farther to the leeward. It is also probable the peculiar poison would be more widely disseminated in the neighborhood and cause similar cases elsewhere. Besides, the facts stated do not point to typhoid fever as the infection. Capt. Davis states that he does not believe the disease to be typhoid. Osler says: "Filth, bad sewers, or cesspools can not in themselves cause typhoid fever, but they furnish the conditions suitable for the preservation of the bacillus and possibly for its propagation." The large majority of cases of typhoid fever is believed by most authorities to be due to infected drinking water; in most cases of Texas fever, as stated, the only drinking water is condensed. I have never been able to trace any cases to infected milk or to personal contact with persons suffering from typhoid fever.

(B) The temperature course in many cases is very similar to that of typhoid fever. I have often observed a step-like ascent for several days, a persistence near the fastigium for a few days, then a gradual decline. The morning temperature is generally somewhat lower than the evening temperature, though in some cases the exacerbation takes place in the morning. In convalescence the morning temperature is usually subnormal. I have seen it as low as 95° F. In occasional cases there is more marked remission, the curve more nearly approaching that of malarial remittent fever. The temperature course is, however, the only point of similarity, to my mind, between Texas fever and typhoid.

(C) In regard to the pulse in typhoid fever, Osler says "it is increased in rapidity in proportion to the height of the fever." In all the cases I have seen that were known to be typhoid fever this has been true. Here is one of the most marked and singular peculiarities of the Texas fever: The pulse never becomes accelerated or weakened in proportion to the height of the fever; it is in nearly all cases slow and strong throughout a long attack of the fever, in some cases being subnormal. I have seen a temperature of 104° to 105° F. sustained for several days, with a pulse beat never above 70 to the minute. In convalescence the frequency of the pulse is generally considerably below normal. The pulse remains strong throughout the course of the disease. Albuminoid degeneration of the heart muscle does not take place as in typhoid.

(D) Osler says: "In any long series of cases of typhoid fever diarrhea will be found to be a prominent feature of the disease." I have never seen diarrhea in Texas fever; on the contrary, the bowels are usually constipated, requiring enemata for their evacuation. I have never observed the pea-soup appearing discharge in these cases.

(E) There is never tympanitis, or gurgling in right iliac fossa, or localized points of tenderness in the abdominal region; the cases are never complicated by intestinal hemorrhage or peritonitis, which it is well known occur in a certain proportion of cases in even mild epidemics of typhoid fever. In fact, the only intestinal trouble seems to be a liability to a relapse of the fever from slight errors in diet during convalescence. On this point one physician informed me he based his diagnosis of typhoid fever; but it seems to me in any protracted, continued fever errors in diet are liable to lead to recurrence.

(F) In no case presenting the peculiar complexus of symptoms of the Texas fever have I ever seen the rose spots of typhoid fever, or in fact any eruption.

(G) In Texas fever there is very little emaciation or prostration in lengthy cases, contrary to the universal falling away of typhoid patients; this even though the fever lasts quite as long and is just as high as in an ordinary case of typhoid. In fact, throughout the disease there is a remarkable sense of wellbeing, the patient probably having a fair appetite and wishing to read the newspapers when his temperature is 104° or 105° F. There is no preliminary epistaxis in Texas fever. The "typhoidal state" is never developed—no sordes on teeth, cracked tongue, jactitation, etc.

(H) The occurrence of typical cases of typhoid fever in the same locality showing none of the peculiarities of the Texas fever is a point in the diagnosis worth consideration.

(I) I have never seen or heard of a fatal case of the genuine Texas fever, so the impossibility of getting at the morbid anatomy of the affection will necessarily render its study and final elucidation difficult. When the fact is considered that the only symptom that resembles typhoid fever is in some cases the temperature curve, it seems pretty well established that, whatever the nature of the disease in question, it is not typhoid fever.

2. Malarial remittent fever.—(A) If the fact be allowed that the drain was at fault in producing the cases of fever described in the above-quoted report of Capt. Davis, it seems to me the conditions mentioned would limit the possible poisonous principles to malaria, i. e., at least considering the present state of scientific knowledge in regard to zymotic poisons. It might of course be possible that there exists in the Rio Grande region a special poisonous principle which produces a peculiar fever, but that it should be wholly confined within the limits of that climatic region and should affect chiefly a particular class of people seems, to say the least, highly improbable. Capt. Davis says: "There is no description of this disease to be found in any work I have consulted, and a new arrival, if confronted with it, thinks at first he has typhoid to deal with, but the sense of wellbeing, the comparatively slow and strong pulse, the absence of marked iliac tenderness, etc., make him change his diagnosis to malarial fever (remittent), but when quinine has been ordered and the temperature immediately and invariably goes up one or two degrees, he is in a quandary."

This last is one of the most peculiar points in connection with this fever—the therapeutic inefficiency of quinine. It fails in not one case, but in everyone, and generally, as Capt. Davis says, runs up the temperature instead of decreasing it. I have in several cases tried quinine continuously and faithfully, but always with the result stated. The fever is not reduced nor the disease shortened by the use of antiperiodics; this point alone will serve to eliminate a possible malarial origin. It is well known that in all climates and in all races quinine is entirely adequate to control malarial diseases. Osler says in regard to malarial remittent fever: "The fever yields, as a rule, promptly to quinine, though here and there cases are met with, rarely indeed in my experience, in which they are refractory."

(B) The same author says: "The diagnosis of malarial remittent fever may be definitely made by the examination of the blood. Vandyke Carter, in his monograph, alludes to the value of this method in the fevers of India. In many cases here we are at first unable to distinguish between typhoid and continued malarial fever without a blood examination. A more wide-spread use of this means of diagnosis will enable us to bring some order out of the confusion which exists in the classification of the fevers of the South. At present the following febrile affections are recognized by various physicians as occurring in the subtropical regions of this continent: (a) Typhoid fever; (b) typhomalarial fever—a typhoid modified by malaria infection or the result of a combined infection; (c) the malarial remittent fever, and (d) continued thermic fever (Guitéras). In these various forms, all of which may be characterized by a continued pyrexia with remissions or with chills and sweats (for we must remember that chills and sweats in typhoid fever are by no means rare), the blood examination will enable us to discover those which depend on the malarial poison. In this latitude we have not the opportunity of seeing many of the protracted and severe cases, but I am inclined to think that future observations will show that apart from the thermic fever there are only two forms of these continued fevers in the South, the one due to the typhoid and the other to the malarial infection. The typhoid fever of Philadelphia and Baltimore presents no essential difference from the disease as it occurs in Montreal. Dock has shown conclusively that cases diagnosed in Texas as continued malarial fever were really true typhoid."

In my observation of the continued fevers of the Texas region I have paid particular attention to the microscopic examination of the blood. The plasmodium malariæ in any of its forms has been undiscoverable in all cases in the blood of patients suffering from the Texas fever, while the organism has been genera detected in typical malarial cases occuring synchronously and which succumb to quinine.

(C) The temperature curve of Texas fever does not show the marked remissions that we expect and see in many cases of malarial remittent fever.

(D) The fact that the pulse in Texas fever does not increase in rapidity and lose in strength in proportion to the height of fever may be here mentioned.

(E) There are no chills or sweats in the Texas fever.

(F) The occurrence of typical malarial cases in the same locality may be mentioned as an important point in differentiating the two affections. The above points seem to me to eliminate malarial remittent fever from any possible connection with Texas fever.

3. Simple continued fever.—The much greater severity and longer duration of the Texas fever will serve to distinguish it from febricula. Osler defines febricula as "fever of slight duration." The longest limit set by him for it is seven days. He says the most important point in the diagnosis of simple continued fever is "the rapid disappearance of the pyrexia." Acute gastro-intestinal disturbance and herpes on the lips are unknown in Texas fever. Again he says: "A form of low fever with or without chills has been described as sometimes following exposure to foul odors of sewer gas." He mentions this under the head of febricula. It is evident, however, that if such an affection should be definitely found to exist, it should be separately described as an independent disease. Moreover, "a good deal of doubt exists in the minds of the profession about these cases of so-called sewer-gas poisoning. It is a notorious fact that workers in sewers are remarkably free from disease, and in many cases which have been reported the illness may have been only a coincidence." In this connection see the report of Capt. Davis, quoted above.

Cases of febricula of various types are occasionally met with throughout the Texas region, and are generally readily recognized.

4 and 5. Influenza and dengue.—The epidemic character of these diseases, the catarrhal and nervous symptoms of the former, its various sequelæ, and the eruption; the characteristic recurrence and the violent muscular pains of the latter disease, of course, make confusion with them impossible. I have seen epidemics of both these diseases along the Rio Grande. There remains to be described:

6. Texas fever.—The cases of this affection are all sufficiently alike to convince the observer that it is a peculiar type of fever of some description, and, as stated above, it is enough different from all the ordinary varieties of fevers to justify the conclusion that it should not be classed with them.

There are, as a rule, no prodromata in Texas fever; the patient claims to have felt well up to the time of the attack. Not often does he complain of a chill or preliminary chilly sensation. He comes to the hospital saying that "fever" has attacked him some hours previously, and complains of headache, often of pains in the back and limbs. Sleeplessness is often a feature of the disease, especially in its early stages. Those above mentioned comprise all the nervous symptoms. In a very few cases I have seen a mild delirium at night, described by the nurse as "flightiness." I have never seen symptoms of gastro-intestinal irritation. Very rarely indeed has the patient vomited even once during the course of the disease. I have never seen diarrhea, and in nearly all cases there is a distinct constipation. In a few cases the patients have complained of diffuse abdominal pain, and upon examination in these cases there has been found a rigidity of the whole muscular wall of the abdomen (especially the recti muscles), which is probably due to the accompanying constipation. Enemata always produce a relief of this pain. A very peculiar feature is that mentioned above, viz, the remarkable slowness and strength of the pulse combined with high temperatures. I have often seen the pulse normal with a temperature of 104° or 105° F. Sometimes it is subnormal while the temperature is comparatively high. Both temperature and pulse are often subnormal during convalescence. The pulse respiration ratio is usually about the normal. The temperature ranges in height according to the severity of the attack, in mild cases from 100° to 103° F.; in the severer cases from 103° to 105° F., or even to 106° F. The fastigium is generally rapidly gained, is maintained for a greater or less period, and the fever then terminates by lysis. In some cases, as mentioned above, the temperature curve resembles that of typhoid fever, but these cases show not one single other feature of typhoid fever. The duration of the disease is from two to six weeks, the average duration being, in my opinion, about three to four weeks. There is usually a slight morning remission; rarely this may come in the evening. There is a remarkable sense of well-being throughout the disease; this has been remarked, I think, by all observers. The patient continually asks to be allowed to sit up, to have a more liberal diet, etc. There is a very slight loss of weight and strength even in protracted cases. I have thought, though I would not as yet state it as a settled fact, that there is more of a tendency to contraction of the pupil than in most febrile diseases. I have never seen any skin eruption with this complaint.

The above gives, I think, a general picture of the symptomatology of Texas fever. I have not detected any constant or at all marked enlargement of the spleen. I have not seen or heard of a fatal case of this disease. I do not believe it would prove fatal except in a very weak organism or where antipyretics are injudiciously used. The soldiers (those most liable to be attacked) are a picked class, and, as a rule, of robust constitutions. That the prognosis is so good is a very fortunate circumstance, but it will tend to make the definite settlement of the etiology of the disease a very difficult question.

The diagnosis is not, I think, difficult as a rule, if the case is watched sufficiently long and well. Of course, in all continued fever cases symptoms of malarial or typhoid infection should be anxiously looked for in regions where these diseases are liable to occur.

Etiology.—My opinion as to the cause of Texas fever may be gathered from what I have written above. I think the fever due entirely to the peculiar climatic conditions of this region. To speak more definitely, the great length of the hot season and the height and continuance through a great part of the day of the maximum temperature, coupled with exposure to and work in the hot sun, especially in those who are by reason of previous habitation in northern climates unacclimated to this portion of the country. The dryness of the atmosphere and comparatively small elevation above the sea level I believe to be the factors in the establishment of the peculiar type of the fever. Maj. Kimball, Medical Department, U. S. Army (Report of the Surgeon-General, U. S. Army, for the year ending June 30, 1893), says: "That the long-continued temperature of a southern Texas summer is largely instrumental in the production of the fevers which so often prevail, I think, admits of little doubt, and that exposure to the midday sun ought as much as possible to be avoided."

According to Capt. Davis (see above quotation) the fever was found at Fort Clark only among soldiers "who did fatigue duty in the broiling sun." Osler says: "Guitéras has called attention to a form of fever occurring in the South known in Florida as 'Florida fever,' in the Carolinas as 'country fever,' and in tropical countries as 'fievre inflammatoire.' The cases last for a variable time and are mistaken for malaria or typhoid, but he believes them to be entirely distinct and due to a prolonged action of the high temperature. He has called the condition a 'continued thermic fever.'"

I believe Texas fever to be a form of Guitéras's "continued thermic fever," and I have of late so diagnosed the cases I have met with in the column for cause of admission in the Monthly Report of Completed Cases. In my observation the disease has been limited to unacclimated soldiers who do considerable work in the sun and those civilians who have similar histories and environment. I have never known an officer to be affected with the disease, nor in a considerable practice have I seen any cases except in those exposed to the same conditions as the soldiers.

In spite of the universal scientific belief that most of such diseases are of bacterial origin, I do not believe any germ or organism is responsible for the existence of the so-called "Texas fever." Capt. Davis, after stating his belief that the drain mentioned above was at fault in producing those cases occurring at Fort Clark, says: "Finally the conviction was forced upon me that the materies morbi was a ptomaine generated in the intestinal tract, caused by a germ from without." With the utmost respect for the opinion of one of the most distinguished surgeons in the Army, I am compelled to say I do not believe the intestinal tract to be the fons et origo mali nor the portio invasionis in this affection. It seems to me that any disease affecting primarily the intestinal tract would lead to conspicuous intestinal symptoms, e. g., cholera, typhoid fever, dysentery. At Fort Hancock during a summer I spent there as post surgeon there was a good deal of genuine malarial remittent fever which affected only recruits lately reporting from Jefferson barracks; the great change in climate seemed to incubate the disease germs, e. g., Laveran organisms. I do not recall having observed there any cases of what I afterwards learned to differentiate as Texas fever. The malarial cases occurring there had no peculiar features, and were perfectly controllable by quinine or Warburg's tincture. I am of the opinion that the altitude at Fort Hancock (over 3,000 feet above sea level), coupled with the enormous daily range of temperature there, serves to counteract the at times excessive heat of the sun for a short time in the middle of the day.

I may as well state briefly here a theory which seems to me to account for the peculiar thermic fever observed in this and other tropical countries. In the more temperate regions of the United States, where the humidity of the atmosphere is great, exposure to excessive heat is often followed by insolation or sunstroke, or what may be called acute thermic fever—a continued form of fever resulting from high temperature not being described there. On the other hand, in this region, where the atmosphere is relatively dry, sunstroke is practically unknown. I have myself lived over twenty years in Texas, and I do not remember that I ever heard of (I know I have never seen) a case of sunstroke occurring here.

I believe that the acute thermic fever is replaced here by the continued form which attacks preferably, as stated, those unacclimated.

I believe Texas fever to be due to a paresis or, more strictly speaking, a partial inhibition of the functions of the sympathetic nervous system, due to excessive "wear and tear" of that apparatus, the locus minoris resistentiæ being the heat mechanism. Men exposed to and laboring in the sun day after day in this dry climate have an enormous amount of work thrown upon the sweat glands and the heat radiating and conducting functions of the body; this is especially felt by those who suddenly institute such a regimen and who have not had their tissues educated up to the required resisting point by heredity or acquired experience. In the north there is less evaporation and radiation, and hence there occurs a sudden inhibition, a throwing out of balance of the thermotaxic or heat regulating centers. In this dry region, where the radiating and evaporating functions after excessive and unaccustomed use get gradually overworked and consequently weakened, the fever sets in less acutely. The fever, according to this explanation, is due to a lessened dissipation of heat from the body rather than to increased metabolism of the tissues within the body. This explains the slight loss of weight and strength during long attacks of the fever. In fact all the constant symptoms seem explainable on the basis of a paresis of the sympathetic nervous system, the remarkably slow heart being due to an inhibition of the sympathetic accelerator fibers supplied to the heart (also probably to a slowing accompanying the lessened peripheral resistance from the accompanying paresis of the vaso-motor fibers). The constipation may be due to weakened function of the excitors of peristaltic movement and secretion—Meissner's and Auerbach's plexuses; the sleeplessness to lessened vaso-constriction in the brain believed to accompany if not cause the condition of sleep. Though probably more blood passes through the cutaneous vessels than normally, the heart perhaps not being slow enough to counterbalance the effect of the lessened resistance, there is not a corresponding loss of heat from the surface owing to the suspension of action of the sweat glands and the throwing out of balance of the thermotaxic centers in the medulla. The preservation of nearly normal weight of tissues is, as stated before, due to the fact that the patient suffers from a failure to expend heat and not from an increased production of heat due to consumption of the tissues or increased metabolism. The contraction of the pupil, if found by future observation to be a constant feature of the disease, is due to an inhibition of the dilator fibers of the iris and the consequent unopposed action of the circular fibers supplied by the third cranial nerve or motor oculi.

A few words in conclusion as to the best plan of treatment may not be amiss. The disease is self-limited, and with careful nursing will wear itself out, the vis medicatrix naturæ being all sufficient to control the majority of cases. On a removal of the cause (exposure to the sun) the balance of the heat centers is gradually and permanently regained.

As a method of prophylaxis I would recommend the avoidance, as far as possible, of all work during the middle hours of the day in the heated season in this climate. An entirely symptomatic treatment has seemed to me to be the best. Medication directed to the disinfection of the alimentary canal has in my experience always yielded negative results. Liquid diet, preferably milk, and careful nursing are, I think, the essentials. I think it better to carefully avoid modern antipyretics; they have not seemed to me perfectly safe in the treatment of continued fevers.

In this region I occasionally give these patients small doses of phenacetine to relieve headache when present. The best means of reducing hyperpyrexia is the application of cold water, according to the height of the fever, using either simple sponging of the surface of the body, the wet pack, or the cold bath. This reduces the temperature, temporarily adding much to the comfort of the patient, and I believe it serves to lessen the total duration of the disease. In rare cases the temperature seems to run up after the wet pack, but a second application has never in my experience failed to reduce the fever. The application of cold certainly seems to be the rational treatment of this fever, if my ideas as to its etiology are correct. Enemata at intervals control the constipation and seem indirectly to relieve all the symptoms. The sedative action of opium occasionally administered at night relieves the sleeplessness. I believe the use of opium (morphine hypodermically is the best method of administration) in the early stages of continued fevers to be tonic and conservative, adding much to the ability of the patient to withstand the ravages of the disease. During convalescence tonics are indicated, such as strychnine or small doses of quinine.

In conclusion, I desire to reiterate my purpose in preparing this necessarily very incomplete paper, that it may perhaps serve to elicit the opinions of others who have doubtless given thought and consideration to the subject, and thus contribute in a small measure to the "careful elucidation" of the intricate and interesting question of fevers in the South. I fully realize that such an important subject should not be lightly or superficially dealt with; that it is a subject for years of

study and the examination of hundreds of thermographs, and hence feel much hesitation in forwarding this preliminary paper. I make no claim that the question is definitely settled; I simply wish to state my opinion that Guitéras is correct in his description of a peculiar form of fever (first differentiated by him) in the extreme southeastern regions of the United States, and I believe that the so-called "Texas fever" will be found to be a variety (essentially the same, though varying possibly in some of its features) of his "continued thermic fever."

VENEREAL DISEASES.

The admission rate for venereal diseases, 73.08, was a slight improvement on that of the previous year, 76.73; but the constant sickness was 5.41, as compared with 5.33. Of the 73.08 admissions, 40.22 were occasioned by gonorrhea, 13.68 by syphilis, 11.90 by chancroids, and 7.28 by other diseases of this class. The average duration of the cases was 27.0 days—43.2 for syphilis, 26.08 for chancroids, 24.3 for other cases, and 22.0 for gonorrhea. The relative prevalence was greatest among the Indians, and much less among the negroes than among the whites, the latter being a fact, seldom, if ever, noted before this year. Fifty-three men were discharged for disability on account of these diseases—44 whites, 5 Indians, and 4 negroes.

Columbus barracks, Ohio, had the highest admission rate, 333.88, much higher than that of the previous year, 292.72, and a noneffective rate of 24.08, as compared with 18.54. The other depots for recruits compare very favorably with Columbus barracks in this respect, Davids Island with 66.53 admissions and 2.78 noneffectives, and Jefferson barracks with 51.66 and 1.91. Forts Brown, Ringgold, and McIntosh, Tex., and Jackson barracks, La., had each an admission rate of more than 200, and Washington barracks, D. C., Fort Clark, Tex., St. Francis barracks, Fla., Mount Vernon barracks, Ala., and Fort Thomas, Ky., had each more than double the average rate of the Army.

In discussing the prevalence of venereal diseases it is to be noted that the statistics sometimes fail to include the whole of the cases. Where duty is light soldiers affected with certain forms of disease frequently seek treatment at the hands of some civilian physician to prevent their condition from becoming known to the command. When the garrison at Fort Douglas went into camp for ten days near the post a decided increase of sickness was noted during the period, the exposures and fatigues of camp life telling on the men and bringing out defects and partial disabilities that would not have been manifest in the ordinary course of garrison life. Included in this increase of sickness were eight cases of venereal disease which were in existence prior to the field service, and which would probably not have been reported to the post surgeon but for the changed conditions and more active duties necessitated by camp life. Again, in speaking of the prevalence of venereal diseases at Columbus barracks, the depot surgeon states his opinion that it is no uncommon occurrence for men so diseased to treat themselves or get treatment outside without having their names appear on sick report; and the post surgeon of Fort Brady is confident that not more than 25 per cent of the venereal cases at his post came under his observation.

ALCOHOLISM.

The admission rate for alcoholism has been falling gradually during the past few years: In 1893, 33.97; in 1892, 37.23; in 1891, 40.01; in 1890, 40.73; in 1889, 41.31, and as the average annual rate of the previous decade, 50.50. Table XVII shows the prevalence of alcoholism at the various posts and its influence on the effective force of the garrisons during the past year. The large posts having the worst record in this respect are Willets Point, N. Y., 170.27; Fort D. A. Russell, Wyo., 84.74; Fort Logan, Colo., 64.06. West Point, N. Y., has the best record, 2.61. The recruiting depots had low rates: Jefferson barracks, 4.13; Columbus barracks, 6.39, and Davids Island, 21.53.

RHEUMATIC AFFECTIONS.

The admission rate for rheumatism continued to decline during the past year, 65.84 per thousand of strength, as compared with 71.52 in the previous year, 75.33 in 1891, 83.19 in 1890, and 96.97 as the average annual rate of the previous decade. Of the 65.84 admissions of the past year 4.86 consisted of cases of acute articular rheumatism, 12.22 of subacute and chronic cases, and 48.76 of muscular rheumatism. The average duration of the first was 39.7 days; of the second, 33.8 days; of the last, 11.3 days. The relative prevalence was considerably greater among the colored men than among the whites and the Indians. Of 26 discharges 22 were white, 3 colored, and 1 Indian. Omitting minor posts from consideration the greatest prevalence of rheumatic affections was found at St. Francis barracks, Fla.; Fort Wingate, N. Mex.; Fort Missoula, Mont,; Davids Island. N. Y.; Mount Vernon barracks, Ala., and Fort McKinney, Wyo., showing as heretofore pointed out in these reports that climate has less to do with the prevalence of rheumatism than other influences of a less general character.

PULMONARY CONSUMPTION.

The admission rate for consumption during the past year was 2.85; during 1892 it was 4.34, and during the decade previous to last year 3.28. The rate of the past two years has been increased by the service of Indian troops. In 1892 the rate of admission among the aborigines was 35.62, and last year 20.98, as compared with 3.27 and 2.32 among the whites. A total of 72 cases was taken on sick report—52 whites, 5 colored, and 15 Indians. Out of this number and those carried forward from the previous year 17 died and 44 were discharged. Of the deaths 11 were white, 1 colored, and 5 Indian, and of the discharges 32 were white, 3 colored, and 9 Indian.

PNEUMONIA AND PLEURISY.

Pneumonia also was more prevalent and fatal among the Indians than among the whites. The absolute number of admissions was 108—94 white, 6 negro, 8 Indian; and the deaths 18—16 white and 2 Indian. The discharge of 2 white soldiers has also to be added to the disability occasioned by this disease.

No death nor discharge was charged against pleurisy, although 52 cases were reported—whites 45, negroes 6, and Indian 1.

INJURIES.

The admission rate for injuries, 243.29, differs little from that of the previous year, 254.76, and less from that of the previous decade, 249.10. About one-half of the cases were contusions and sprains, with an average duration on sick report of 8.8 days. Gunshot wounds occasioned only 3.32 of the 243.29 admissions. The total number of these wounds was 84, with 25 deaths and 13 discharges. Drowning caused 21 deaths, fractures 6 deaths and 12 discharges, and rupture 21 discharges.

During the year 22 cases of suicide were reported: Officer, 1; enlisted men, 21. This is equal to a rate of 0.80 per thousand of strength, as compared with 0.82 in 1892 and with 0.69 as the average rate of the years of the previous decade. Six of these cases were in men under 30 years of age, 9 between 30 and 40 years, and 7 over 40 years. Resort was had to gunshot by 16, to poison by 5, to drowning by 1. Alcoholism was reported as the cause in 6 instances; fear of court-martial and despondency each in 3; love troubles, insanity, and temporary mental aberration each in 1, and undetermined in 7.

The statistics of suicide for the seven years, 1887–1893 inclusive, give a total of 134 cases: Officers, 7; enlisted men, 127. Infantry, 64; cavalry, 28; artillery, 15; ordnance, 5; engineers, 2; medical and hospital corps, 7; and others, 13. Under 30 years of age, 51; between 30 and 40, 56; over 40, 27. Gunshot, 97; poison, 26; drowning, 4; throat-cutting, 3; and 1 each severing radial artery, suffocation, strangulation, and crushing by railroad train. In 37 the cause was undetermined. In the others the reported causes were as follows: Insanity, 10; temporary mental aberration, 5; despondency, 12; nervous depression following influenza, 1; weakness of mind, 1; fear of court-martial, 5; charge of theft, 2; failure to obtain promotion, 1; fear of the results of syphilis, 2; alcoholism, 42; tired of living, 1; love troubles, 6; jealousy, 2; domestic troubles, 3; homesickness, 1; distaste for service, 1; financial losses by gambling, 2.

INFLUENCE OF SEASON ON THE SICK RATE.

Notwithstanding the increased prevalence of malarial diseases during the past year the autumnal endemics made no marked impression on the general curve of sickness. The average monthly rate of admission per thousand of strength was 107.42. In January and February the rate was a little below this average, but in March it rose to 125.51, its highest point, falling gradually through April, May, and June to 92.26 in the last-mentioned month. In July, August, and September it was a few units higher than the average, but fell in October to 95.01. In November and December it reached, respectively, 113.17 and 114.61.

List of special reports received from medical officers during the calendar year 1893.

MEDICAL REPORTS.

Name.	Rank.	Report.
Arthur, W. H	Captain and asst. surgeon	Appendicitis.
Bradley, A. E	1st lieut. and asst. surgeon	Epidemic of measles; thermograph accompanying.
		Pleuro-pneumonia, with thermograph accompanying.
		Pneumonia presenting unusual features.
		Chronic bursitis.
		Thoracic aneurism.
Brown, P. R	Major and surgeon	Smallpox.
Bushnell, G. E	Captain and asst. surgeon	Cerebral abscess.
Clendenin, Paul	do	Scarlet fever.
		Temporary aphasia.
Davis, W. B	do	Texas fever, with thermograph accompanying.
Ewen, C	Major and surgeon	Narcolepsy.
Gibson, J. R	do	Cerebral abscess; death and autopsy.
Girard, A. C	do	Pneumonia, empyema.
		Typhoid fever.
Girard, J. B	do	Cirrhosis of liver; death and autopsy.
		Perityphlitic abscess; death and autopsy.
Gorgas, W. C	Captain and asst. surgeon	Aneurism of aorta; death and autopsy.
		Perforating gastric ulcer.
Harvey, P. F	Major and surgeon	Special report of a case of obstetrics.
Ireland, M. W	1st lieut. and asst. surgeon	Mumps at Fort Apache.
Jarvis, N. S	Captain and asst. surgeon	Do.
		Malarial glycosuria, with thermograph accompanying.

List of special reports received from medical officers, etc.—Continued.

MEDICAL REPORTS—Continued.

Name.	Rank.	Report.
Kean, J. R	Captain and asst. surgeon	Sarcocele, left testicle.
Kilbourne, H. S	Major and surgeon	Texas fever (3) cases, with thermographs accompanying.
Lippincott, Henry	do	Acute lobar pneumonia.
		Gonorrheal ophthalmia.
		Pneumonia.
Macauley, C. N. B	Captain and asst. surgeon	Remittent fever; thermograph.
		Remittent fever; thermograph.
McClellan, Ely	Major and surgeon	Pneumonia.
McElderry, Henry	do	Typhomalarial fever; thermograph.
Munday, Benjamin	Captain and asst. surgeon	Malarial fever at Fort Niobrara.
Pilcher, Jas. E	do	Typhoid fever; thermograph.
		Special report on epidemic of dengue, Fort Ringgold.
Robinson, S. Q	do	Hystero-epilepsy.
Stark, A. N	1st lieut. and asst. surgeon.	Narcosis during parturition.
Swift, E. L	Captain and asst. surgeon	Diphtheria at Fort Yates.
		Diphtheria at Fort Yates.
		Influenza at Fort Yates.
esson, L. S	do	Acute phthisis; death and autopsy.
ilton, H. R	Major and surgeon	Pneumonia; thermograph.
		Puerperal convulsions; death.
		Cerebro-spinal meningitis; thermograph.
		Epidemic influenza; thermograph.
		Typhoid fever; thermograph.
orney, G. H	Captain and asst. surgeon	Special report on epidemic of dengue.
urrill, H. S	Major and surgeon	Opium poisoning; two cases.
ickery, R. S	do	Varioloid.
		Poisoning by morphine.
Waters, W. E	do	Acute pneumonia; empyema; death and autopsy.
		Diffuse erysipelas.
Wells, G. M	Capt. and asst. surgeon	Scarlet fever at Fort Grant.
White, R. H	Major and surgeon	Typhoid fever and malarial fever; 89 thermographs.
Wilcox, T. E	do	Remittent fever; 47 thermographs.
Winne, C. K	do	Epidemic influenza; 23 thermographs.
Woodhull, A. A	do	Valvular disease of heart; death and autopsy.
		Chronic rheumatism.
Woodruff, C. E	Captain and asst. surgeon	Special report on military food.
Worthington, J. C	do	Valvular disease of heart; pneumonia; death and autopsy; thermograph.

SURGICAL REPORTS.

Name.	Rank.	Report.
anister, W. B	Captain and asst. surgeon	Rupture of the liver; run over by a wagon; death and autopsy.
radley, A. E	1st lieut. and asst. surgeon	Three unusual fractures.
		Found drowned; autopsy.
omegys, E. T	Captain and asst. surgeon	Gunshot wound of left chest; death and autopsy.
eWitt, Calvin	Major and surgeon	Traumatic insanity.
irard, A. C	do	Contracted toes.
		Gunshot wound of groin; death and autopsy.
artsuff, A	do	Enucleation of right eye.
eyle, A. B	1st lieut. and asst. surgeon	Wound of the heart; death at the end of three days.
ean, J. R	Captain and asst. surgeon	Stricture of the urethra.
ieffer, C. F	1st lieut. and asst. surgeon	Ventricular hemorrhage and acute cerebritis; thrown from a horse.
ilbourne, H. S	Captain and asst. surgeon	Laparotomy.
ippincott, Henry	Major and surgeon	Fracture of clavicle.
		Dislocation of ankle and fracture of fibula.
		Contusion of left elbow.
ynch, Charles	1st lieut. and asst. surgeon	Tuberculosis of the testicle.
ason, C. F	do	Removal of loose body from ankle joint.
obinson, S. Q	Captain and asst. surgeon	Gunshot wound of forehead and abdomen, not perforating.
ark, A. N	1st lieut. and asst. surgeon	Resuscitation from drowning; Sylvester's method.
iles, H. R	do	Fracture of cervical spine.
mington, John	Attending surgeon	Gunshot wound, left lower leg; amputation.
ilton, H. R	Major and surgeon	Contusion from a fall.
alters, Fred G	Hospital steward	Dislocation of left shoulder.
orthington, J. C	Captain and asst. surgeon	Death from freezing.
		Tumor of mammary gland in the male.
		Gunshot wound of head; suicide.

SURGICAL OPERATIONS.

During the year the Medical Department of the Army reported 254 surgical operations, 84 of which were necessitated by injuries and 170 by disease. The number, character, and results of these are shown in the following statement:

Nature of operation.	Disease or injury.	Total.	Recovered.	Died.	Remarks.
Removal of tumors		**28**			
Enucleation	Sebaceous, 12; encysted, 6; fatty, 5; fibroid, 4; epithelioma, 1.	28	28	......	Scalp, 3; face, 12; ear, 4; hip, 2; leg, 2; neck, 2; hand, 1; back, 1; breast, 1.
Opening of abscesses		**17**			
Incision	Cellulitis, 2; caries, 3; perityphlitic, 1; liver, 2; perinephritic, 1; bursal, 1; ischiorectal, 1; subcutaneous, 6.	17	17	......	Abdomen, 4; perineum, 3; ulna, 2; scapula, 1; knee, 1; leg, 1; back, 1; thumb, 1; thigh, 1; neck, 1; forearm, 1.
Operations on the eye		**11**			
For enucleation		3	3	......	
For sarcoma		1	1	......	
For pterygium		2	2	......	
For ectropion		1	1	......	
For dacryocystitis; slitting of lachrymal duct.		1	1	......	
For glaucoma, iridectomy		1	1	......	
For foreign bodies		2	2	......	
Operations on the ear		**1**			
For foreign body		1	1	......	
Operations on the nose		**1**			
For deviated nasal septum		1	1	......	
Operations on the mouth		**2**			
Removal of tonsils	Tonsillitis	2	2	......	
Operations on the veins		**6**			
For varicocele		5	5	......	Ligature.
Ligation of femoral vein	Pistol wound	1	1	......	
Operations on the respiratory organs		**4**			
Paracentesis	Pleurisy, 1; empyema, 1.	2	2	......	
Tracheotomy	Œdema of glottis	1	1	......	
Foreign body		1	1	......	Sand burr in larynx
Operations on the digestive organs		**24**			
For fistula in ano		3	3	......	
For fissure of anus		1	1	......	Incision.
For hemorrhoids		17	17	......	Incision, 4; ligature, [illegible] injected with carbolic acid, 2; clamp and cautery, 2; sphincter stretched, 1.
Laparotomy	Obstruction of bowels.	1	....	1	
Paracentesis	Anasarca	1	1	......	
For irreducible hernia		1	1	......	
Operations on the lymphatic glands		**14**			
Removal of glands	Venereal, 6; tubercular, 3; adenitis, 1.	10	10	......	
Glands curetted	Venereal, 4	4	4	......	
Operations on the urinary organs		**19**			
For stricture of urethra:					
Internal urethrotomy	Gonorrhea	7	7	......	
External urethrotomy		1	....	1	
Dilatation	Gonorrhea	5	5	......	
Meatotomy	Gonorrhea	2	2	......	
Incision	Gonorrhea	3	3	......	
Litholapaxy	Calculus in bladder	1	1	......	
Operations on the generative organs		**21**			
For phymosis	Congenital, 6; traumatic, 2; chancre, 4; gonorrhea, 2.	14	14	......	
Testicles	Disease	3	3	......	Castration.
Hydrocele	Aspiration	4	4	......	

Nature of operation.	Disease or injury.	Total.	Recovered.	Died.	Remarks.
Operations on bones		**3**			
Removal of portions	Fracture, 2; exostosis, 1.	3	3		Cranium, 1; tibia and fibula, 1; metatarsus, 1.
Operations on joints		**41**			
Reduction of dislocations		38	38		Shoulder, 17; elbow, 8; wrist, 3; clavicle, 3; hip joint, 2; ankle, 2; patella, 1; rib, 1; instep, 1.
Removal of loose bodies		3	3		Knee, 2; ankle, 1.
Operations on limbs		**32**			
Amputation for injury:					
Forearm	Injury	1	1		Primary.
Fingers	Shot, 6; injury, 13; frostbite, 2.	21	21		Primary, 17; secondary, 4.
Thigh	Fracture	1		1	Primary.
Leg	Shot	1		1	Primary.
Feet	Frostbite	2	2		Secondary.
Toes	Injury, 4; frostbite, 1.	5	5		Primary, 1; secondary, 4.
Amputation for disease:					
Thigh	Suppurative arthritis kneejoint.	1	1		Secondary.
Operations on muscles and tendons		**3**			
Tenotomy		3	3		
Operations on the skin, etc.		**27**			
Ingrown nails		17	17		
Removal of nails	Injury, 4; disease, 1.	5	5		
Skin grafting	Ulcer, 1; contusion, 1	2	2		
Removal of foreign bodies		3	3		
Aggregate		**254**			

Deaths among civilians and their causes are shown in the following table:

Disease.	Adult males.	Adult females.	Children.	Total.
Acute febrile and infectious diseases		2	18	20
Enthetic			1	1
onstitutional		4	12	16
Developmental	1	2	12	15
Nervous	1	2	6	9
Respiratory	4	9	13	26
irculatory		1	1	2
Digestive	2	3	7	12
rinary	1	6	2	9
ntegumentary			1	1
Parturition and results		3	1	4
Total from disease	9	32	74	115
otal from injury	1	1	5	7
nknown	1	1	5	7
Total from all causes	11	34	84	129

MARRIAGES AND BIRTHS.

On the reports are noted 36 marriages—6 of officers, 26 of enlisted en, 4 of civilian attaches.

The births reported numbered 487—male, 252; female, 235. One undred were children of officers; 328 of enlisted men; 59 of civilians. ighteen Indian children, 11 males and 7 females, born at Mount Ver-on barracks, Ala., are included in this total.

SANITARY CONDITION OF MILITARY POSTS.

QUARTERS.

The remarks made in my last annual report concerning the dilapidated condition of the quarters at a number of posts, as at Forts Keogh, Custer, and Yates, Whipple barracks, and San Carlos, continue to be applicable at the present time. At Whipple barracks crumbling foundations, broken ceilings, leaky roofs, with overcrowding and the closing of the ventilators in the ceiling to prevent down drafts, gave rise to many cases of catarrh, sore throat, and febrile malaise, and no doubt increased the predisposition to the typhoid epidemic which prevailed at the post during the year. The miserable accommodations at San Carlos were fully described in my last report. In February of the present year the post surgeon in his sanitary report spoke of the crying necessity for better quarters for the enlisted men; and in March he invited the attention of all concerned to the inconvenience and suffering which fall to the lot of the soldier who is compelled to live in the wooden shacks of this post in which the temperature during the summer reaches an astonishing height. At Fort Grant the barracks are low adobe buildings, entirely inadequate and unsuited for their purpose, with little or no space below the floors, badly ventilated and intolerably hot in summer. The old buildings at Camp Eagle Pass are in exceedingly dilapidated condition. Four of them have been reported by the post quartermaster as unsafe and not worth repairing. The post surgeon refers to the purchase of the site by Government as giving hope of improved quarters at this post, inasmuch as, according to his statement, all recommendations heretofore made have been disapproved because the site was rented.

At all of these posts modern airy and comfortable buildings are imperatively needed if they are to be continued in service.

Defective ventilation is referred to in connection with overcrowding in the dormitories at Fort D. A. Russell. Two small holes cut in the ceiling of each building permit the tainted air to escape into the garret, but as there is only one aperture, closely covered with shutters, in each gable to ventilate the garret, the result is far from satisfactory. This arrangement provides at best only for an imperfect exit of tainted air and nothing for the entrance of fresh air. In each squad room 2 tubular flues should be constructed, extending from the ceiling to above the roof, and 2 fresh-air conduits, opening under the stoves, should be placed beneath the floor. A similar ventilating flue should also be constructed in the room occupied by the officer of the guard. This room is small, and frequent complaints have been made about its close and ill-smelling air.

During the year overcrowding in the quarters of the enlisted men was noted specially at the recruiting depots at Davids Island and Columbus barracks. At the former the floor space was at one time inadequate, although the height of the barracks gave a fair cubical allowance. The surface barely permitted a passage between the beds, and the expired air of one man was breathed by others before admixture with the general atmosphere of the rooms. At the latter depot some of the beds were so close as to nearly touch, and the large sick reports during the winter months were attributed to this overcrowded condition at a time when the windows could not be left open for free ventilation.

Overcrowding in guardhouses was of more common occurrence: and exception was taken to the building in several instances, as well as its excess of occupancy. At Davids Island it was represented as antiquated, dilapidated, dismal, and infested with vermin, giving an average of 600 cubic feet to each prisoner, but ventilated only by narrow shafts partially covered at the top, so that the cubic allowance was of little value in the absence of a free air movement. Unfavorable reports concerning the guardhouse came also from Forts Marcy and Sherman, and the Presidio of San Francisco. At the first mentioned, the maximum occupancy of 10, in November, 1893, reduced the air space of each prisoner to 248 cubic feet; at the second, the average daily occupancy for January, 1894, corresponded with an allowance of 250 cubic feet per man, but the maximum occupancy for the same month reduced the air space to 230 feet. At the last-mentioned post bedbugs have settled in the woodwork of the walls and ceilings so that it is difficult to effect their destruction. Although no overcrowding of the guardhouse was reported from Fort Myer, efforts have been made to have the construction of a new one authorized, as the present building is an old one-story frame structure, dirty and infested with vermin. Efforts have also been made to have a new hospital built at this post, as the present structure is old, poorly arranged, insufficiently heated, and too small for the needs of the garrison. It is probable that both of these desirable improvements will be authorized when the appropriations will admit of the expenditure.

The condition of the officers' quarters at Forts Barrancas and Ringgold is denounced specially in sanitary reports. At the former post they are reported as old, ill-planned, and very uncomfortable; money spent in attempts at their repair is wasted. The second-story rooms at the latter post should be increased to full height, with a well ventilated air space between the ceiling and the roof. The present height of 9 feet in the center, sloping to 4 feet at the sides, renders these rooms intolerable in the summer to those who are obliged to occupy them.

The condition of the post exchange meets with unfavorable comment at Forts Logan and Hamilton. This and the laundry are the only buildings at Fort Logan that are not in excellent sanitary condition. They are old and dilapidated, and were originally intended as temporary frame accommodations during the building of the post. The floor of the exchange is rotten, uneven, and full of cracks. An attempt is made to keep it clean, but the attendants feel that no amount of work will make it look well. At Fort Hamilton exception is taken to the location and condition of the quarters of the noncommissioned staff as well as to the condition of the canteen building.

In my last report I gave some illustrations of the inadequacy of the allowance of fuel at certain Northern posts during the winter months. The past winter does not appear to have been so cold, at least fewer references to the severity of the weather are found in the sanitary reports. Complaints of insufficiency of fuel both for officers and men came, however, from Fort Brady, where it is claimed that the winter allowance should be extended through May and the first half of June, as fires are necessary in the barracks during this period. Otherwise the men will seek resorts where there is plenty of warmth and light, and these resorts are not usually elevating in their influences.

DRAINAGE AND SEWERAGE.

Drainage is referred to in the sanitary reports of only a few posts. A system of tile drainage is needful at Angel Island to dispose of surface and subsoil water and to keep the subfloor spaces of barracks and quarters dry. At Fort Grant a break in the floor of an artificial lake in front of the officers' quarters was speedily followed by a seepage of water into the cellars of the men's barracks 200 yards distant and on a lower level. This suggests the likelihood of a similar seepage from privy pits in rear of the officers' quarters with a fall of 1 in 20 from the pits to the quarters. The post quartermaster was directed to prepare estimates for water-closets to replace the pits in question. A fault in the drainage system at Fort Brady originated in the inadvertent sinking of the ash pits in the barracks, hospital, and administration building below the level of the drains around the foundation walls. In the spring during the melting of the snow, and in summer after every heavy rainfall, water collects in these pits, and as cinders drop into them the buildings become filled with gas. A seepage through the walls of some of the cellars was also developed. The removal of waste water at Fort Sully is mainly effected by open ditches, which are foul in summer and so frozen in winter that the wastes have to be removed by tubs placed in the wash rooms, the floors of which are constantly damp when the tubs are in use. One of the companies disposes of its waste water by means of a filtering cesspool in the subsoil gravel, which so far has operated successfully. A ditch was dug from the wash room to a point 72 feet in rear, 4 feet deep at the wash room and 7 feet at the other end. Here a pit 7 feet in diameter was sunk until it reached the gravel at a depth of 13 feet. A wooden box, a cube of about 4 feet, was placed in the gravel, the bottom and sides perforated with 1-inch augur holes. This box was braced into position and the space between its sides and the earth partially filled with logs. The box was then half filled with selected gravel, as was the space at its sides. The pipe in the ditch leading to the box is a 6-inch square wooden box, tin-lined on its bottom and sides and the joints soldered. The connection with the wash room is made by a 2-inch iron pipe packed in a wooden box and having a wire screen at the top and bottom to prevent the passage of anything save fluids. The drain is below the frost line; the ditch and pit are closely filled up save for a ventilator from the latter rising 10 feet above the surface. At this post, Fort Sully, request was made for a dry-earth system to replace the privy pits in rear of the officers' and laundress's quarters. These pits are connected with the quarters by a covered shed in which are built cupboards for provisions, ice chests, and other attachments of the kitchen, and the pit odors are recognized not only in the sheds but in the adjoining kitchen and quarters. The pits at Fort DuChesne, fully described in my last report, have been replaced by dry-earth closets. Complaint was made of a cess pit still in use at Eagle Pass, and its closure and replacement by dry-earth boxes, as in general use at the post, was requested. At Boise barracks, on the other hand, there has been a return to the privy pits. The difficulty of obtaining scavenger labor for operating the earth closets, introduced in 1892, caused the post commander to recommend a return to the old system, which was done on the approval of the department commander.

Some correspondence took place during the year on the sewerage system of Fort Bayard, certain defects of which were noted in my last report. The post surgeon urged the construction of an improved system, but on account of the limited water supply and other considerations his views were not sustained by the post commander or medical director, who considered that in the absence of an appropriation sufficient for the construction of a system based on thoroughly scientific and sanitary principles the safest, surest, and most economical plan of protecting the health of the garrison was by a system of dry-earth closets for excreta, and open drains, well made and cared for, to dispose of liquid waste.

The post surgeon at Key West barracks has, on several occasions, invited attention to remediable faults in the disposal of excreta by the pail system in use at this post. The system is objectionable as insufficient, without daily tendance, for the demands made upon it; and even with the utmost care the floors become saturated and foul-smelling by leakage and other causes. The system in use when this post was garrisoned in former years was a great improvement on the present method. Then wooden troughs, lined with galvanized iron, were used. These, which were as long as the buildings and as wide as the seats, were mounted on wheels and emptied as often as necessary by attaching a mule and drawing them into the sea, when, by an automatic arrangement, the trough was turned down and washed out. But superior to this would be a system of water carriage which could be constructed at small cost. Salt-water tanks, filled by windmill power, would cost little compared with the advantages to be derived; and in view of the equable temperature the whole system of pipes might be laid on the surface.

The post surgeon at Jackson barracks recommended that the present vaults, which are emptied once a month under contract by an excavating company, be disused and a new vault be constructed to be emptied daily into the Mississippi by a steam pump. This proposition was approved by me and referred to the Quartermaster-General of the Army.

Full reports have been filed of the faults of the sewerage system of Whipple barracks. The system consists of a 12-inch main, several 9-inch branches and 4-inch house drains, each of the last having just outside of the houses a running trap with a vertical 4-inch pipe rising a few feet above ground and connected with the drain on the house side of the trap. This vertical pipe is intended for flushing purposes. The faults of the system consist of the absence of any means for ventilating the sewers or soil pipes and the absence of traps on the house fixtures, the only guard between the sewers and the houses being the trap on the house drain.

The condition of the sewerage system at Fort Sill continues as described briefly in my last report. During the present year the post surgeon has given an account in detail of its many defects, as he considered it his imperative duty to urge prompt and radical sanitary improvements, as well in the conscientious discharge of his obligation to those whose physical well-being is intrusted to his care, as to escape the measure of blame that would otherwise attach to him in the event of an epidemic outbreak as the result of the exceedingly insanitary condition of the post. By far the larger portion of the sewage is discharged into a depression in the ravine to the south and southwest of the post, from which it is scarcely practicable to remove it by drainage. The accumulation of sewage at this point has gone on for years until quite a pool has been formed, about 100 yards in length and 15 yards in average width, which in hot weather emits an intolerable odor. Judging from the ground-surface lines, the grade of the sewers in some parts of their course is sufficient, but in others it is evidently not so, being less than 3 inches to the hundred feet, a grade much too scant in the absence of ample and frequent automatic flushing. The alignment is imperfect both in the horizontal and the vertical plane, and in those portions where the grade is least the depressions are so pronounced as practically to form traps, and in some localities to divide the sewer into dead sections. At the head of each branch sewer in rear of the officers' quarters is a galvanized iron pipe 4 inches in diameter and 10 feet in height, presumably intended for ventilation. No other means seem to have been provided for the admission or withdrawal of air. The branch sewers begin near the buildings with a running trap and a vent on the house side. Over the vent is a wooden hopper into which the wastes from kitchen and baths are discharged. In some instances the hopper is omitted, the pipes entering the vent above the water seal.

Blocking of sewers was specially reported from Fort Wadsworth and Fort Schuyler. At the former post the sewer from the line of officers' quarters and the hospital became clogged by the entrance of willow-tree roots. The sickness on the officers' line has always been excessively high; but there is no evidence that this was caused by sewer air or by the blocking of the pipes. At the latter station the sewer of the old fort, which had been disused for many years, was dug out and put in working condition during the year.

In a special report on the plumbing at Fort Douglas, certain defects, mainly leakages from misuse and neglect rather than the result of faulty construction or inferior materials, were noted and remedied. In this report special attention was invited to quarters vacant on account of the absence on detached service of those holding them. The water in the traps of these quarters had evaporated and the houses were filled with sewer odors. As the quarters at this post are double, neglect of this kind in one set affects the sanitary condition of the adjoining quarters. Similar conditions were referred to in the sanitary reports from Fort Logan.

The imperfect and dangerous character of the sewerage system of Fort Monroe remains as stated in my last annual report.

The construction by the city of San Francisco of a sewer, called the Locust-street sewer, across a part of the reservation of the Presidio has resulted in a nuisance, which has continued for the past eighteen months. The sewage enters a little rivulet which flows over the southern margin of the reservation into a marsh just below the post hospital where it spreads over the surface. This nuisance should be abated.

WATER SUPPLIES.

The water wagon continues in use at Fort DuChesne and Camp Eagle Pass. The quality of the supply at the fort is excellent as drawn from the Uintah river, but it is liable to be contaminated before use. And similarly at Eagle Pass the strong winds that so often prevail fill the barrels with dust and dirt, and the water, even in those of them that are best protected, becomes coated with a scum of light particles, which does not conduce to pleasure in drinking. The piping of water from the town supply is strongly urged by the medical officer of the camp.

An insufficient supply was reported from a few of the posts. At Fort Hamilton, owing to the growth of settlements in its vicinity, the service main from the Brooklyn waterworks is now too small to give the post an adequate supply. At Jefferson barracks the supply is insufficient, particularly when the control of fire and the various needs of a cavalry post are taken into consideration. Diarrhea and malarial fevers have been attributed to the use of the water. The use of boiled water has been ordered and the drinking of water from the taps prohibited. The post surgeon requested that this prohibition be repeated to the recruits once a week, and that its violation be considered as "conduct to the prejudice of military discipline." At Fort Apache it has occasionally happened that the well water has proved insufficient. At such times water from the acequia, the former post supply, has been turned into the reservoir, and this has been followed invariably by the appearance of diarrheal cases on the sick report. At Fort Assinniboine, during one week in August, the water supply from Beaver Creek was scanty. At this period water from the creek and from a spring in marshy ground on the creek bottom was delivered by water wagons. It is hoped that an artesian well, now in progress, will afford an abundant supply of wholesome water. The supply of the Presidio of San Francisco became at one time interrupted by a break in the flume carrying the Lobos Creek water. Connection was made around the obstruction by means of a 6-inch pipe. The water of certain springs developed between the post and Fort Point was also turned into the post reservoir. In several sanitary reports mention is made of the possibility of danger to Lobos Creek by the overflow of a pond which receives the outflow of the Lake-street sewer of San Francisco. This pond is only about 180 yards from the creek, and the intervening ground, although at present preventing overflow, does not prevent seepage through the sand. A careful watch has been kept over the quality of the creek water.

At some posts insufficiency of supply has been remedied during the year—at Fort Warren by connecting with the water mains of the Boston city supply through the medium of the supply for Gallups Island. At Fort Grant, where scarcity heretofore has been remedied for the time being by extending the line of piping farther up the canyon, a further extension of 2 miles has been made to a point, where the water is assumed to be permanent and in sufficient quantity for a liberal supply. A reservoir and fountain on the parade ground in front of the officers' quarters furnish water for grass and shade trees and demonstrate the sufficiency of the supply.

Improvements have been made at several other posts. From Madison barracks it is reported that the new supply from Henderson Bay was completed in November last, and that there will be no danger in future from contaminated water. Sewage contamination of the former supply from Black River Bay was believed to have been the occasion of a serious outbreak of typhoid fever. Bear Spring, which formerly gave an ample supply to Fort Bowie, but which for two or three years back has been drying up, has recommenced its flow. Since April last the water supply at this post has ceased to occasion anxiety. The effort to procure well water at Mount Vernon barracks proved a failure. A new reservoir, well protected and ventilated, has been built for the spring water. The hydraulic ram has been replaced by a steam pumping engine, by which the water is raised to an iron tank of 36,000 gallons capacity on the summit of the hill occupied by the buildings of the garrison. This tank is elevated 50 feet from the ground and 150 above the level of the pumping station. From this the water is conducted by 4-inch mains to the barrack rooms, kitchens, officers' and noncommissioned staff quarters, and the men's water-closets and bath rooms; also to the barracks of the Indian company and to hydrants in the camp of the Indian prisoners. Samples of the water examined in the laboratory of this office were found to be of excellent quality. At Fort Niobrara a new tank, having a capacity of 60,000 gallons, has been built. This, with some additional piping, has permitted the men's closets to be utilized. These were formerly closed on account of want of water. On several occasions during the rains of April the spring at Fort Clark was flooded with surface water. A wall has been built between the arroyo and spring for the protection of the latter. The facilities for providing distilled water have been increased, and it is hoped that the use of this water for drinking purposes will lessen the prevalence of fever at this post during the coming autumnal season. The question of a water supply at Fort Reno remains unsettled. The causation of fever cases by the river supply is so well recognized that the hydrants around the post are placarded "Poison," to warn recruits and inexperienced persons from using this supply for drinking. Caddo Spring water was kept in tanks and barrels in the company quarters; and when this supply failed on account of the increased needs of the Indians' school the barrels were kept filled with distilled water from the ice machine. As the sale of ice decreased after September so that the machine could not be run steadily enough to supply the post with drinking water, the post surgeon requested an allowance of 30 cords of wood per month and extra-duty pay for one man to enable him to continue the distillations. This was referred to the Quartermaster-General of the Army, approving the suggestion, as under the conditions existing at Fort Reno the condensed water from the ice machine was in a sanitary sense the most valuable part of the water supply of the post. Meanwhile, work on the artesian well was abandoned and a driven well was sunk in the river bottom about 300 yards from the stream. From this well 45 gallons per minute have been pumped with no apparent diminution of the supply. The water was reported cool and clear, but hard. On analysis it was found to be pure organically, but was pronounced too hard for potable use, containing 125 parts of mineral matter per 100,000 parts of water (73 grains per gallon), chiefly bicarbonates, sulphates, and chlorides of lime and magnesia; in fact, a mineral water. The water question at Fort Stanton appears now to have been solved by the sinking of a well about 285 feet deep. In the report for June last it was stated that although the Rio Bonito had been quite dry for two weeks the supply of excellent water from the well had been ample for all purposes.

The water supply of Fort Myer, briefly described in my last report, has been improved during the year by the sinking of an artesian well. The sanitary report for June stated that no change had taken place in the water question, but that the new well, which is claimed by the contractor to fill all requirements as to quality and quantity of water, will in all probability be reported upon soon by an officer detailed by the War Department for that purpose.

Suggestions were made by the medical officers of a few posts for the improvement of their water supplies. The post surgeon at Fort Sheridan urged the extension of the intake farther into the lake to avoid blocking by slush ice in winter and turbidity during northeast storms. During the past year several temporary stoppages were reported and the water was sometimes unfit for use after severe storms. The condition of the water supply at Fort Meade remains unchanged. From the hardness of the spring water I was formerly of the opinion that the supply came from the high grounds on the north side of the creek, but a personal inspection has led me to believe that the springs are fed by filtration from the creek. Although the water is apparently untainted by the sewage of Sturgis, its hardness makes it undesirable for a post supply. A good soft water would be preferable; but from a sanitary point of view the question of a new water supply for this post is not an urgent one. At Fort Canby the water supply of the post consists of surface drainage collected behind dams in the ravines, the permanence of the supply during the summer being assisted by two or three springs of subsoil water. From the dams the water is carried through pipes by gravity to a cistern at the engine house and from there it is forced into a reservoir of 50,000 gallons capacity at an elevation of 100 feet in rear of the commanding officer's quarters. This reservoir supplies the officers' quarters and all buildings north of and including the post hospital. From two dams in rear of the barracks the water falls by gravity, filling two connected tanks of about 10,000 gallons total capacity, any excess of supply being conducted to the cistern at the engine house. From these two tanks all buildings south of the post hospital are supplied, but as their elevation does not exceed 30 feet, the pressure and flow of water from jets and faucets is low and unsatisfactory. In rear of four sets of the officers' quarters and of the old and new hospitals are brick cisterns, each of about 4,000 gallons capacity, which collect the roof water and retain it for drinking purposes. This supply, though it may fail before the end of summer, is measurably pure and satisfactory as far as the officers are concerned. Three sets of officers' quarters are without cisterns. On the contrary, the supply of water to the enlisted men is the surface drainage and subsoil water before mentioned, which, though abundant during the rainy season, is inferior in quality, and during the dry season has been deficient in both quality and quantity. Plans and specifications were submitted one year ago by the post quartermaster for the improvement of the water supply at this post by the collection of rain water from the roofs of a number of the larger buildings at the post and its storage in one large reservoir in rear of the quarters of the commanding officer—the entire post to be supplied with water from the latter reservoir by gravity. Favorable action was not taken on this proposition.

FOOD AND COOKING.

Considering the large number of posts from which reports are received regularly covering the subjects of food and its cooking, the small number of references to deficiency or inferior quality of the articles of the ration or to faults in their preparation demonstrates the amount of care and attention given to these matters by the officers responsible.

From several posts, such as Forts Supply, Reno, and Sill, fresh beef was reported at certain seasons as dry, lean, tough, and with an excessive proportion of bone. So long as beef contracts are awarded for so long a period as a year, and at a price which prevents the contractor from supplying any other beef than that from the neighboring ranges, poor beef is to be expected with every failure of the local pastures. The post surgeon at Fort Sill considers that a bid under 3½ cents per pound for the year means that the bidder intends to procure his beef from the local ranges. As the pastures in the vicinity of Fort Sill are usually excellent during the summer and autumn he recommended that contracts be let to cover two periods, one from May to December, the other for the remaining months of the year. For the one period the contracts could be made with a view to accepting the range-fatted beeves, and the expectation of getting beef of satisfactory quality would be not unreasonable. For the other period the stipulation should be explicit for corn-fed beef or its equivalent in grade. This suggestion was regarded favorably by the post commander.

The post surgeons at Fort Wadsworth and Key West barracks also reported the fresh beef as of inferior quality. At the one post the cooks of the various organizations complained of it as being tough and having too much waste. At the other the medical director character ized it as poor, tough, and foul smelling, the post surgeon explaining this by the statement that beef cattle are frequently many days in transportation from the place of purchase on the mainland and arrive at their destination in a feverish state and unfit for food. He suggested that beef purchased in New York be forwarded in refrigerators by the Mallory Line of steamers, which touch at Key West once a week en route to Galveston, Tex. At Fort Thomas, also, the beef for a short time was reported as being excessively tough and of a quality inferior to that ordinarily furnished by the contractor.

The cooking of the meat as conducted at the last-mentioned post, by steam heat, was unfavorably criticised by the medical director. He reported the vegetables as well cooked, but the meat as insipid, the juices being extracted and the tasteless fiber becoming tougher by the steaming, as in the method by the "Warren Cooker." Meat should be subjected to a high temperature early in the process of cooking, and the steam range does not afford the requisite temperature. The method of cooking the fresh-meat ration came under discussion at West Point also. The post surgeon considered that the method of baking failed to preserve the flavor and juices of the meat. The meats were subjected to heat in deep, close vessels, giving cuts that were either dry and overdone or greasy. He claimed that the best results were obtained by cooking in a pan in a hot oven and basting carefully until done. According to the post quartermaster, this method of pan roasting had been employed at the post until about two years ago, when deep copper vessels, tin lined and closely covered, were procured. Since then the meats had been cooked in these vessels, with an occasional change to the open pan method for the sake of variety. When treated in the close vessels the juices and flavor thrown off are retained in the vessel and condensed on the meat so as to baste it regularly. The cuts obtained by this manner of cooking he found to be in no instance dry or burned, such a result being impossible, as a moisture pervades the vessel during the whole process of cooking. The degree to which the meats are cooked depends upon the liking of the cadets. To suit the taste of those who desire their meats well done, some of the roasts are subjected to a dry heat after having been pot-roasted as stated. As a rule, the pot roasts are preferred to the pan roasts.

Post messes, as compared with company cooking, are referred to in only one report—from Fort McPherson—where, on the institution of a post mess, the port surgeon gave it as his opinion that, with competent cooks, this system is a great improvement on the old one of company messing. Inspection of the food, cooking, police of the mess hall, etc., are made easier, and faults are more readily detected and corrected.

At Fort Columbus several cases of acute diarrhea among the prisoners were referred by the post surgeon to fermented hash. The outbreak occurred about the time that new potatoes were issued to the command, and some persons attributed it to their use; but as the disease was confined to the prisoners, it is reasonable to suppose that the cause was a local one.

At Fort Thomas the bread was reported of inferior quality on several occasions, and at Forts Apache and Columbus and Washington barracks a similar inferiority of the bread was referred to the poor quality of the flour. At Fort Apache a civilian baker was imported from Los Angeles, but he failed to get better bread than was furnished by the post baker. The civilian certified that the post baker understood his business thoroughly, and had excellent yeast. The fault was therefor concluded to lie in the flour. At Fort Columbus an examination of some samples of flour was made, but the percentage of gluten was not determined. At Washington barracks the bread, which was tough, heavy, and dark-colored, became of good quality when a better brand of flour was issued.

Complaint was made on two occasions of the California potatoes issued at Fort Marcy. They were found to be pervaded with dark-colored spots. Colorado potatoes, subsequently issued, were of excellent quality.

Coffee was the only other article of diet reported against, and this only in two instances. At Fort Yellowstone several hundred pounds of a low-grade article were received, and one issue was made therefrom; but the acting commissary of subsistence, on recognizing the quality, recalled the unused portion of the issue, and submitted the entire quantity of the invoice, as well as another of similar quality, for the action of a board of survey. At Fort Brady the samples complained of contained 15.6 per cent of black, worm-eaten, and moldy kernels. Even when picked over the coffee when prepared was so weak and musty as to be unfit for use. It, also, was submitted to the action of a board.

CLOTHING.

During the year many reports were received concerning the unsatisfactory character of the shoes issued to the troops. At Fort Marcy the men wore these shoes only when on strictly military duty; they were regarded as heavy, ill-fitting, and too stiff and hard in the uppers. At Fort Supply the same criticism was made: If worn occasionally, chafing of the feet, and if worn constantly, corns on the toes and soles were developed in consequence. The post surgeon at Fort Washakie had many men undergoing treatment for corns, bunions, and ingrowing toe nails due to the use of the issued shoes. Similar cases occurred at Fort Barrancas, where the post commander in an indorsement stated that the complaints of the men were very general and on the line taken by the post surgeon. At Fort Keogh the shoes were characterized as too heavy, stiff, and unyielding. The average weight of a pair is 3 pounds; they embarrass their wearers in running, frequently excoriating and blistering the feet, and in consequence the men avoided wearing them whenever they could do so.

Later in the year a new style of shoe was issued which is reported as having given better satisfaction than that formerly provided. The post surgeon at Fort Supply states, however, that the canvas lining is so large as to permit of wrinkling, and that the wrinkles chafe the foot. Unfavorable remarks came also from St. Francis barracks to the effect that many of the new calfskin shoes broke in the uppers before the sole was appreciably worn, and that the leather in some instances could be easily torn with the fingers.

The military cadets during their summer encampment and when on duty at the World's Columbian Exposition suffered considerably from blistered and chafed feet. The return of sick and wounded from July 15 to August 31 shows 71 different cadets to have been admitted to hospital or to have been excused from some part of their military duties by reason of ill-fitting shoes. It is not clear, however, that the uniform shoe was wholly in fault in these instances. The cadet uniform shoe was recommended in 1888 by a board of officers consisting of Lieut. Col. H. S. Hawkins, commandant of cadets; Maj. Charles H. Alden, surgeon, and Lieut. E. D. Smith, Nineteenth Infantry, after a most careful and thorough investigation of the subject. The cadets as a rule prefer close-fitting shoes, and it is possible that they may have selected them too short and too narrow. If so, the matter is one which can be remedied by the inspector of clothing, who passes on all shoes issued. Besides, the cadets wear ununiform shoes generally of a light grade. These shoes are not permitted to be worn on guard, drill, or other military exercises, but they may have caused disability by being worn at other times.

Exception was taken to the underclothing for summer wear at Key West barracks and as far north as Davids Island. As conducive to the health and comfort of the men, the attending physician at the first-mentioned post renewed his earnest request, as given in my last annual report, for "feather-weight" all wool undershirts and drawers. If these are not provided the men purchase for themselves cheap gauze stuffs which do not prevent rapid evaporation when perspiring, and consequently tend to induce those diseases that arise from chilling of the surface. At Davids Island the coarse woolen shirt and cotton-flannel drawers in use indiscriminately, summer and winter, are incompatible with a temperature of 80–95° F.

On the other hand, at Fort Brady and Madison barracks the issue of canton flannel drawers is regarded as altogether wrong, for winter wear especially. A man marching his tour of guard duty exposed to a temperature of 30° below zero, or what is worse, facing a wind from Lake Superior, needs all the protection that warm clothing can give him.

The adoption of a white uniform for troops serving in warm latitudes is regarded as having contributed to the health and comfort of the men. The post surgeons at Forts Sill and Barrancas speak strongly in favor of this uniform during the heated months.

HABITS, CLEANLINESS, ATHLETIC EXERCISES, ETC.

The reports of medical officers regarding the habits of the men are generally favorable. At some posts where houses of bad repute are established in the vicinity, the sick report often becomes burdened with the results of dissipation, particularly after pay day. The unfortunate exposure of the recruits at Columbus barracks to harmful influences of this kind has already on several occasions been pointed out. The depot surgeon in his report for October remarked that venereal diseases continued to be the principal ailment of those on sick report. On the morning on which he wrote he had 24 such cases in hospital, with only 20 cases of all other diseases in hospital and in quarters combined. This is in part due to the environment of the recruits. As an offset to reports of this kind there are others, such as that from Fort Yellowstone, which say that a reading and debating club has been organized, and that the initial purchase of books has been made, there being no post library or reading room. The statements of prevalence of venereal diseases and alcoholism, on page 58, *supra*, show that if any change has taken place in the habits of the men it has been rather of a desirable character than otherwise.

The post exchange has seldom been mentioned in the sanitary reports. At Fort Thomas the infrequency of drunkenness was attributed to the difficulty experienced in obtaining intoxicants anywhere except at the exchange, for on the establishment of some drinking saloons near the post an increased prevalence of alcoholism was speedily manifested. The post surgeon at Fort Brady reported against the location of the exchange at his post. He represented it as housed in one end of a building intended for shops, its appointments crude in the extreme, and its brick walls unplastered. As men are influenced to a great extent by their surroundings, he considered that any improvement in the situation and appointments of the exchange would have a corresponding beneficial effect on the habits of the men.

Some remarks were made in my last annual report concerning the dissipated and unclean habits of the Indian companies. I am gratified this year to be able to cite Col. Irwin's commendation of the company stationed at Fort Sill: "Camp of Troop L, Seventh Cavalry, Indian, with some 40 families, in admirable police. Never saw better, especially when it is remembered that the command has been on this site for more than two years."

Several references to inadequate facilities for bathing have been noted, but none charging any command or part of a command with lack of personal cleanliness. Inadequate provision is reported from Forts Canby and Washakie, Key West and St. Francis barracks, and from San Carlos. Camp Eagle Pass, however, has the poorest equipment of this kind. The bath house is a tent in an arroyo, and the water is heated in an old can over an open fire out of doors. In spite of these difficulties the men bathe and are above the average in cleanliness.

In my last report I referred to the very general call made by medical officers for the fitting up of rooms for athletic exercises. The benefit accruing from systematic work in a gymnasium is acknowledged by all. Capt. Paul Clendennin makes a strong plea in behalf of a gymnasium at Fort Brady, and as many of his arguments are equally applicable to the general question, I submit his remarks:

> I desire again to invite your attention to the necessity of a suitable gymnasium and amusement room at this post. The men are shut up from early in November until May, the severe weather and the heavy snowfalls preventing their drilling or taking out-of-door exercise to any extent. It is needless for me to go into any extended argument to show the self-evident fact that such a state of affairs must be detrimental both physically and mentally. That such is the case is well shown by a glance at the report of the medical director, showing this post at the head of the department in alcoholism and well to the front in venereal, although I dare say not 25 per cent of the latter ever comes under the observation of the surgeon.
>
> In the development of the young man from the raw recruit to the well set up soldier physical training should go on *pari passu* with the drill. Of what utility is all a soldier's knowledge of drill, provided he is unable to march? Or of what avail that he is a sharpshooter if his wind is so poor that he is all of a tremor when he comes within reach of the enemy from the exertion of reaching that position? Or of what profit is his courage and skill if in charging he meets with obstacles he can not surmount or ditches he can not cross, or if, having overcome these difficulties, he reaches the time for the supreme effort in an exhausted condition? A soldier should be an all-round athlete and be able to run, jump, climb, and even swim with his arms and ammunition on his person. This can only be effected as the result of painstaking training. To be sure, the drill itself is exercise, and has an excellent effect on the men; and in the South, where out-of-door drill is possible during most if not all of the year, excellent results may be obtained; but in the North, where the men are shut up indoors the greater part of the time, not much can be expected. After a man's short period of enlistment has terminated he should be returned to the community in a better condition physically than when he entered the service. A man who has been a soldier should retain during life the erect and elastic carriage of the well set up soldier. This carriage is attained in part by the setting-up drill, by pride in appearance, and a desire to look well, but chiefly by regular gymnastic exercise. Then, too, consideration should be had for the health of the men and the good effect of regular exercise upon this as well as the prevention of disease by the increased robustness due to exercise and consequent increased physical development. Viewed from the moral point a gymnasium and amusement room would be a great boon to the men, providing them with a place of resort and recreation which, it is to be hoped, will prove more attractive than the evil resorts of the adjacent town. I have no doubt that many a spree of the men is due to the necessity of working off an excess of animal spirits. If, as I feel sure it would, the

> gymnasium should prove attractive to the men, the effect on their morals and habits, and consequently on the prevalence of certain diseases at this post, would be marked. The advantages of physical training and the attractions of a gymnasium and amusement room seem to me so great that the expenditure of a few thousand dollars would be more than justified. Here is a post that cost $250,000, built for the accommodation of four companies of infantry, in a latitude having seven months of winter, with no provision whatever for the physical education of the men or suitable means for their exercise, excepting a drill hall over the mess room and the opportunity to shovel snow all winter. This, I maintain, is altogether wrong and should be remedied.

The post commander concurred fully in these views and reported to the post surgeon that plans would be prepared for a suitable building to be used as a gymnasium, practice gallery, drill hall, and post exchange.

APPENDED PAPERS.

Appended are certain statistical tables which give in detail the data on which the statements of this report are based. They are:

I. A numerical view of the effects of disease and injury on the Army during the calendar year 1893, as compared with the corresponding data of the year 1892 and of the decade ending December 31, 1891.

II. The relative sickness of the troops (white, colored, and Indian) in the various military departments.

III. The military posts in each department, alphabetically arranged, with mean strength, admissions for disease and injury; also, deaths and discharges, with ratios per thousand of strength for admissions and noneffectiveness, the averages of daily sickness, and the meteorological data for the year 1893.

IV. A general view of the results of disease and injury at each of the various military stations, arranged in the order of their mean strength.

V. Twenty posts having the highest rates of admission for the year; the said rates compared with those of 1888–1892, inclusive.

VI. Twenty posts having the lowest rates of admission.

VII. Twenty posts having the highest rates of noneffectiveness during the year; the said rates compared with those of 1888–1892, inclusive.

VIII. Twenty posts having the lowest noneffective rates.

IX. Twenty posts having the highest admission rates for disease, excluding venereal diseases, vaccina, and alcoholism, together with their ratios for deaths, discharges, and constant noneffectiveness; also the corresponding average rates of the Army.

X. Twenty posts having the highest noneffective rates for disease, excluding venereal diseases, vaccina, and alcoholism, together with the average number sick daily, and average duration of each case; also the corresponding average rates of the Army.

XI. The military posts in each department, showing the rates of admission, death, discharge, and noneffectiveness for disease, not including venereal diseases, vaccina, nor alcoholism.

XII. The monthly prevalence of disease among the white, colored, and Indian troops of the Army.

XIII. The rates per thousand of strength of admission, death, discharge, and noneffectiveness of the Army and of the troops in the several departments for the year, as compared with those of the decade 1882–'91.

XIV. Admission rates for specific febrile diseases.

XV. Distribution of specific febrile diseases at U. S. military posts during the year.

XVI. Twenty posts giving the largest admission rates for malarial diseases, rheumatism, diarrheal and venereal diseases, respectively.

XVII. Twenty posts giving the highest noneffective rates for malarial diseases, rheumatism, diarrheal and venereal diseases, respectively.

XVIII. The prevalence of alcoholism at the various posts, and its influence on the effective force of the garrisons.

XIX. Number of applicants for enlistment examined during the year, with the number accepted, rejected on primary examination, and declined; also ratios per thousand examined.

XX. Causes of rejection among 20,332 recruits examined, with corresponding rates per thousand of each race examined.

XXI. Nativity of accepted recruits.

XXII. Average height, weight, and chest measurements of accepted recruits.

Respectfully submitted.

GEO. M. STERNBERG,
Surgeon-General.

Hon. DANIEL S. LAMONT,
Secretary of War.

APPENDED PAPERS.

STATISTICAL TABLES.

TABLE I.—*A numerical view of the effects of disease and injury on the Army during the calendar year 1893, as compared with the corresponding data for 1892 and for the decade 1882–1891.*

United States Army.	White.	Negro.	Indian.	Total.
Average strength as shown by returns of the Adjutant-General	*24,567	*2,360	*732	*27,659
as shown by reports of the Medical Department	†22,429	†2,143	†715	†25,287
All admissions to sick report during the year	29,488	2,385	723	32,596
treated in hospital	15.800	1,452	360	17,612
treated in quarters	13,048	860	358	14,266
treated in field	640	73	5	718
Ratios of all admissions per 1,000 of mean strength	1,314.73	1,112.93	1,011.19	1,289.04
for the previous year	1,273.45	1,257.86	1,216.44	1,270.42
for the preceding decade	1,405.17	1,600.00	....	1,424.20
Admissions for disease	24,145	1,825	531	26,501
ratios per 1,000 of mean strength	1,076.51	851.61	742.66	1,048.01
for the previous year	1,026.78	966.11	894.52	1,017.68
for the preceding decade	1,161.88	1,297.09	....	1,175.10
Admissions for injury	5,343	560	192	6,095
ratios per 1,000 of mean strength	238.22	261.32	268.53	241.08
for the previous year	246.68	291.75	321.92	252.74
for the preceding decade	243.29	302.92	....	249.10
Ratios per 1,000 of mean strength of cases treated in hospital	704.45	677.56	503.50	696.48
of cases treated in quarters	581.74	401.31	500.70	564.16
of cases treated in field	28.53	34.06	6.99	28.39
Number constantly noneffective during the year	921.65	68.60	25.12	1,015.37
ratios per 1,000 of mean strength	41.09	32.01	35.13	40.15
ratios for the previous year	39.69	38.55	39.97	39.60
ratios for the preceding decade	43.03	44.26	....	43.16
Number of days lost on account of sickness during the year	336,401	25,040	9,168	370,609
average for each man of the Army	15.0	11.7	12.8	14.7
for the previous year	14.5	14.1	14.6	14.5
for the preceding decade	18.5	16.2	....	15.8
verage number of days each case was treated	11.4	10.5	12.7	11.4
for the previous year	11.4	11.2	12.0	11.4
for the preceding decade	13.2	10.1	....	11.1
verage days treatment for patients discharged for disability	77.6	88.7	48.5	76.7
who died	26.0	29.7	23.8	26.2
umber of discharges for disability	368	24	21	413
ratios per 1,000 of mean strength	14.98	10.17	28.69	14.93
for the previous year	18.26	14.54	31.93	18.35
for the preceding decade	28.85	28.86	....	28.82
umber of discharges for disease	304	18	20	342
ratios per 1,000 of mean strength	12.37	7.63	27.32	12.36
for the previous year	16.04	13.63	28.09	16.20
for the preceding decade	24.25	24.04	....	24.21
mber of discharges for injury	64	6	1	71
ratios per 1,000 of mean strength	2.61	2.54	1.37	2.57
for the previous year	2.22	.91	3.83	2.16
for the preceding decade	4.59	4.82	....	4.61
mber of deaths from all causes	162	18	11	191
ratios per 1,000 of mean strength	6.59	7.63	15.03	6.91
for the previous year	6.11	5.00	20.43	6.44
for the preceding decade	8.39	9.69	....	8.51
nber of deaths from disease	93	11	7	111
ratios per 1,000 of mean strength	3.79	4.66	9.56	4.01
for the previous year	4.23	3.18	11.49	4.36
for the preceding decade	5.53	6.90	....	5.65
nber of deaths from injury	69	7	4	80
ratios per 1,000 of mean strength	2.81	2.97	5.46	2.89
for the previous year	1.88	1.82	8.94	2.08
for the preceding decade	2.86	2.79	....	2.86

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* Used in computing the ratios of deaths and discharges for the whole Army.

† Used in computing all ratios for the Army, except those of deaths and discharges.

TABLE II.—*The relative sickness among the troops, white, negro, and Indian, in the various military departments during the year 1893.*

Army, by departments.		Mean strength of command.	Admissions.						Admission rate per 1,000 of mean strength.	Troops per 1,000 of mean strength constantly noneffective from sickness.
			Quarters.	Hospital.	Field.	Disease.	Injury.	Total.		
East	W..	6,723	4,716	5,491	8	8,692	1,523	10,215	1,519.41	42.25
	N..	132	112	127	......	193	46	239	1,810.61	49.25
	I...	89	52	61	......	76	37	113	1,269.66	41.65
	T..	6,944	4,880	5,679	8	8,961	1,606	10,567	1,521.74	43.34
Missouri	W..	4,009	2,280	3,058	155	4,415	1,078	5,493	1,370.16	40.53
	N..	103	50	120	......	126	44	170	1,650.49	54.24
	I...	57	51	25	......	63	13	76	1,333.33	62.87
	T..	4,169	2,881	3,203	155	4,604	1,135	5,739	1.376.59	41.17
Dakota	W..	2,376	1,395	1,315	91	2,183	618	2,801	1,178.87	37.46
	N..	937	240	606	61	682	225	907	967.98	28.85
	I...	192	58	62	......	87	33	120	625.00	30.75
	T..	3,505	1,693	1,982	152	2,952	876	3,828	1,092.15	33.[illegible]
Platte	W..	2,074	1,112	1,316	26	1,980	474	2,454	1,183.22	34.41
	N..	405	213	318	1	387	145	532	1,313.58	28.78
	I...	186	70	84	......	116	38	154	827.96	22.36
	T...	2,665	1,395	1,718	37	2,483	657	3,140	1,178.24	34.35
Texas	W..	1,733	1,210	1,362	164	2,332	404	2,736	1,578.76	53.97
	T..	1,733	1,210	1,362	164	2,332	404	2,736	1,578.76	53.97
Colorado	W..	2,722	1,470	1,782	108	2,691	669	3,360	1,234.39	37.46
	N..	562	243	278	11	432	100	532	946.62	28.13
	I...	174	114	106	5	160	65	225	1,293.10	27.79
	T...	3,458	1,827	2,166	124	3,283	834	4,117	1,190.57	36.39
California	W..	1,390	416	887	53	1,034	322	1,356	975.54	34.31
	T...	1,390	416	887	53	1,034	322	1,356	975.54	34.31
Columbia	W..	1,365	448	572	35	801	254	1,055	772.89	23.84
	I...	17	13	22	......	29	6	35	2,058.82	84.39
	T...	1,382	461	594	35	830	260	1,090	788.71	24.[illegible]
Hot Springs, Ark	W..	37	1	17	......	17	1	18	486.49	......
	N...	4	2	3	......	5	......	5	1,250.00	......
	T...	41	3	20	......	22	1	23	560.98	......
At large: Miscellaneous deaths and discharges.	W..	......	......	......	......	......	......	......	......	......
	N..	......	......	......	......	......	......	......	......	......
	T..	......	......	......	......	......	......	......	......	......
Total for he Army.	W..	22,429	13,048	15,800	640	24,145	5,343	29,488	1,314.73	41.[illegible]
	N..	2,143	860	1,452	73	1,825	560	2,385	1,112.93	22.[illegible]
	I...	715	358	360	5	531	192	723	1,011.19	35.1[illegible]
	T...	25,287	14,266	17,612	718	26,501	6,095	32,596	1,289.04	4[illegible]

TABLE II.—*The relative sickness among the troops, white, negro, and Indian, in the various military departments during the year 1893*—Continued.

Army, by departments.		Deaths.	Annual death rate per 1,000 of mean strength.	Discharges for disability.	Annual discharge rate per 1,000 of mean strength.	Average duration of treatment among patients		Death rate per 1,000 of admissions.	Discharge rate per 1,000 of admissions.	Recoveries per 1,000 of admissions.	Average sick daily.	Average duration of treatment among all admissions.
						Who died.	Who were discharged for disability.					
East	W	46	6.84	90	13.39	25.17	60.11	4.50	8.81	967.11	290.76	10.39
	N	2	15.15	2	15.15	7.00	93.50	8.37	8.37	962.34	6.50	9.92
	I	3	33.71	1	11.24	52.67	39.00	26.55	8.85	938.05	3.71	11.97
	T	51	7.34	93	13.39	26.08	60.51	4.83	8.80	966.69	300.97	10.40
Missouri	W	25	6.24	61	15.21	14.28	77.24	4.55	11.10	958.85	162.48	10.80
	N	......	......	1	9.71	......	229.00	......	5.88	994.10	6.59	11.99
	I	2	35.09	5	87.72	13.50	76.40	26.31	65.79	855.26	3.58	17.21
	T	27	6.48	67	16.07	14.22	79.45	4.70	11.67	959.38	171.65	10.92
Dakota	W	15	6.31	40	16.83	22.27	97.62	5.36	14.28	964.30	90.06	11.73
	N	6	6.40	11	11.74	50.17	72.55	6.61	12.13	968.00	27.03	10.88
	I	4	20.83	8	41.67	4.50	34.87	33.33	66.67	925.00	5.91	17.97
	T	25	7.13	59	16.83	26.12	84.61	6.53	15.41	963.95	122.99	11.73
Platte	W	17	8.20	20	9.64	44.88	108.25	6.93	8.11	964.55	75.52	11.23
	N	3	7.41	1	2.47	30.33	38.00	5.64	1.88	964.29	11.65	7.99
	I	2	10.75	2	10.75	29.50	30.50	12.99	12.99	993.50	4.15	9.83
	T	22	8.26	23	8.63	41.50	98.43	7.01	7.32	965.93	91.32	10.61
Texas	W	20	11.54	28	16.16	26.10	90.79	7.31	10.23	966.01	93.53	8.82
	T	20	11.54	28	16.16	26.10	90.79	7.31	10.23	966.01	93.53	8.82
Colorado	W	15	5.51	43	15.80	21.47	79.82	4.46	12.80	958.63	103.34	11.23
	N	7	12.45	6	10.67	18.14	97.83	13.16	11.28	964.29	15.81	10.85
	I	......	......	4	22.99	......	43.75	......	17.78	995.50	6.34	10.28
	T	22	6.36	53	15.33	20.45	79.13	5.34	12.87	961.62	125.49	11.13
California	W	11	7.91	28	20.14	56.27	62.00	8.11	20.65	956.49	47.97	12.91
	T	11	7.91	28	20.14	56.27	62.00	8.11	20.65	956.49	47.97	12.91
Colombia	W	8	5.86	18	13.19	7.87	51.61	7.58	17.06	958.29	32.68	11.30
	I	......	......	1	58.82	......	83.00	......	28.57	942.86	1.48	14.94
	T	8	5.79	19	13.75	7.87	58.26	7.34	17.43	957.80	34.11	11.42
Hot Springs, Ark	W	2	......	16	......	49.00	232.44	......	......	......	25.81	......
	N	......	......	1	......	......	289.00	......	......	......	2.03	......
	T	2	......	17	......	49.00	235.76	......	......	......	27.34	......
At large:												
Miscellaneous deaths and discharges.	W	3	......	24	......	......	......	......	......	......	......	......
	N	......	......	2	......	......	......	......	......	......	......	......
	T	3	......	26	......	......	......	......	......	......	......	......
Total for the Army.	W	162	6.59	368	14.98	25.99	77.56	5.53	12.48	964.67	921.65	11.41
	N	18	7.63	24	10.17	29.66	88.66	7.55	10.06	970.23	68.60	10.50
	I	11	15.03	21	28.69	23.82	48.52	15.21	29.04	958.50	25.12	12.68
	T	191	6.91	413	14.93	26.21	76.73	5.89	12.67	964.94	1,015.37	11.87

TABLE III.—*Military posts in each department, alphabetically arranged, with mean strength, admissions for disease and injury, also deaths and discharges with ratios per thousand of strength for admissions, and noneffectiveness, the averages of daily sickness and meteorological data for 1893.*

DEPARTMENT OF THE EAST.

Name of station.	Mean strength.	Cases. Disease.	Cases. Injury.	Cases. Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharges for disability.	Deaths.	Altitude of stations.	Temperature. Mean.	Temperature. Maximum.	Temperature. Minimum.	Total precipitation.
										Feet.	°	°	°	*In.*
Adams, Fort, R. I	259	227	88	315	1,216.22	10.30	39.77	2	3	30	....	....	....	....
Allegheny arsenal, Pa	29	23	....	23	793.10	1.12	38.64	....	1	704	51.6	95	—3	37.84
Augusta arsenal, Ga	25	17	1	18	720.00	.39	15.45	....	1	600	63.8	98	12	48.91
Barrancas, Fort, Fla	120	169	57	226	1,883.33	5.33	44.41	6	1	30	67.9	97	23	44.[illegible]
Columbia arsenal, Tenn.	17	33	4	37	2,176.47	1.12	66.08	....	....	....	....	....	....	....
Columbus barracks, Ohio	626	1,445	169	1,614	2,578.27	57.68	92.16	5	7	759	51.2	95	—12	38.12
Columbus, Fort, N. Y	193	167	43	210	1,088.08	7.51	38.89	5	....	25	51.3	96	1	53.01
Davids Island, N. Y	511	984	183	1,167	2,283.76	24.80	48.44	10	2	30	51.8	96	1	52.01
Frankford arsenal, Pa	42	62	4	66	1,571.43	1.27	30.20	....	....	12	52.9	98	0	37.68
Hamilton, Fort, N. Y	259	389	70	459	1,772.20	9.50	36.68	7	2	47	51.3	96	1	53.01
Jackson barracks, La	116	126	18	144	1,241.38	4.93	42.51	1	1	10	69.4	95	29	48.02
Kennebec arsenal, Me	15	39	1	40	2,666.67	.79	52.78	....	....	200	....	....	....	....
Key West barracks, Fla	61	73	10	83	1,360.66	2.60	42.62	1	....	12	76.9	91	52	22.[illegible]
Madison barracks, N. Y	325	163	32	195	600.00	6.96	21.43	3	2	262	....	....	....	....
McHenry, Fort, Md	155	145	22	167	1,077.42	6.41	41.38	2	2	36	53.5	98	1	32.15
McPherson, Fort, Ga	419	513	70	583	1,391.41	22.69	54.17	4	1	1,200	60.7	96	8	[illegible]
Monroe, Fort, Va	467	555	89	644	1,379.01	21.68	46.42	6	4	7	....	97	....	....
Mount Vernon barracks, Ala	177	314	57	371	2,096.04	8.62	48.70	7	5	200	....	....	....	....
Myer, Fort, Va	259	429	98	527	2,034.75	16.21	62.57	8	2	200	53.7	94	—6	38.25
Newport barracks, Ky	56	75	14	89	1,589.29	1.25	22.81	....	....	588	53.7	95	—11	44.06
New York attending surgeon, N. Y	35	9	2	11	314.28	.22	6.18	....	....	....	51.3	96	1	53.0[illegible]
Niagara, Fort, N. Y	219	103	43	146	666.67	3.81	17.38	....	2	271	....	....	....	....
Ontario, Fort, N. Y	63	57	18	75	1,190.48	2.03	32.18	4	....	282	44.3	92	—6	34.7[illegible]
Plattsburg barracks, N. Y	58	53	11	64	1,103.45	1.64	28.20	2	....	186	....	....	....	....
Porter, Fort, N. Y	113	179	26	205	1,814.16	4.55	40.22	1	2	600	45.8	90	—5	36.6[illegible]
Preble, Fort, Me	62	44	13	57	919.35	1.74	28.10	....	....	51	43.2	93	—9	43.[illegible]
Saint Francis barracks, Fla	129	201	27	228	1,767.44	5.95	46.13	1	1	10	68.4	94	26	54.4[illegible]
Sandy Hook, N. J	58	121	16	137	2,362.07	1.51	25.98	....	....	....	....	....	....	....
Schuyler, Fort, N. Y	113	123	29	152	1,345.13	3.51	31.03	1	....	25	51.3	96	1	53.[illegible]
Springfield armory, Mass	29	54	5	59	2,034.48	1.02	35.05	....	....	250	....	....	....	....
Thomas, Fort, Ky	368	286	48	334	907.61	9.61	26.10	5	4	920	53.7	95	—11	44.[illegible]
Trumbull, Fort, Conn	64	26	12	38	593.75	1.25	19.52	....	1	25	47.7	95	—4	41.[illegible]
Wadsworth, Fort, N. Y	176	174	38	212	1,204.55	6.87	39.04	....	1	160	51.3	96	1	53.[illegible]
Warren, Fort, Mass	113	108	29	137	1,212.39	4.76	42.16	2	2	38	47.9	94	—4	41.[illegible]
Washington barracks, D. C	287	543	39	582	2,027.87	15.58	54.27	7	1	106	53.7	97	—6	[illegible]
Watertown arsenal, Mass	38	25	3	28	736.84	.60	15.79	....	....	100	47.9	94	—4	41.[illegible]
Watervliet arsenal, N. Y	63	53	14	67	1,063.49	2.43	38.62	1	....	50	47.0	96	—6	35.[illegible]
West Point, N. Y	383	424	111	535	1,396.87	9.96	26.00	2	1	167	....	....	....	....
Willets Point, N. Y	370	396	99	495	1,337.84	12.67	34.24	....	2	70	....	....	....	....
Wood, Fort, N. J	56	14	5	19	339.29	.09	1.61	....	....	....	51.3	96	1	5[illegible]
Field	16	6	2	8	500.00	.09	5.65	....	....	....	....	....	....	....
Total	6,944	8,947	1,620	10,567	1,521.74	300.97	43.34	93	51	....	....	....	....	....

TABLE III.—*Military posts in each department, alphabetically arranged, with mean strength, admissions for disease and injury, etc.*—Continued.

DEPARTMENT OF THE MISSOURI.

Name of station.	Mean strength.	Cases.			Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharges for disability.	Deaths.	Altitude of stations.	Temperature.			Total precipitation.
		Disease.	Injury.	Total.							Mean.	Maximum.	Minimum.	
										Feet.	°	°	°	*In.*
Brady, Fort, Mich	170	146	19	165	970.59	5.80	34.13	5	...	696	37.4	92	—26	39.64
Chicago headquarters, Ill	57	16	4	20	350.88	.89	15.67	....	2	661	46.1	95	—16	27.47
Indianapolis arsenal, Ind	24	26	6	32	1,333.33	1.08	44.98	....	1	698	52.0	97	—15	39.35
Jefferson barracks, Mo.	484	763	207	970	2,004.13	24.49	50.59	3	2	475	55.3	99	—2	39.83
Leavenworth, Fort, Kans	742	844	219	1,063	1,432.61	33.73	45.47	16	3	844	....	....	....	....
Leavenworth Prison, Kans	118	83	9	92	779.66	5.16	43.74	1	2	844	....	....	....	....
Mackinac, Fort, Mich	60	25	10	35	583.33	1.45	24.25	1	...	730	38.8	92	—22	33.51
Reno, Fort, Okla	282	398	91	489	1,734.04	16.72	59.28	6	4	1,400	60.2	104	4	20.40
Riley, Fort, Kans	581	561	228	789	1,358.00	22.62	38.98	3	5	1,300	54.9	103	—7	29.72
Rock Island arsenal, Ill.	65	63	14	77	1,184.62	1.83	28.20	....	...	528	47.3	96	—15	27.39
Sheridan, Fort, Ill	635	663	151	814	1,281.89	20.77	32.71	8	2	746	....	....	....	29.79
Sill, Fort, Okla	310	365	56	421	1,358.06	15.64	50.45	5	4	1,200	60.4	105	5	24.19
Supply, Fort, Okla	221	270	61	331	1,497.74	9.89	44.75	9	...	2,300	58.0	111	—2	13.15
Wayne, Fort, Mich	246	250	36	286	1,162.60	9.34	37.99	10	1	580	46.9	93	—10	34.18
Field	174	120	35	155	890.80	2.23	12.80	....	1	....	....	....	....	....
Total	4,169	4,593	1,146	5,739	1,376.59	171.64	41.17	67	27	....	....	....	....	....

DEPARTMENT OF DAKOTA.

Name of station.	Mean strength.	Disease.	Injury.	Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharges for disability.	Deaths.	Altitude of stations.	Mean.	Maximum.	Minimum.	Total precipitation.
Assinniboine, Fort, Mont	514	488	120	608	1,182.88	16.08	31.29	5	1	2,690	....	....	....	....
Buford, Fort, N. Dak	285	184	92	276	968.42	9.77	34.27	2	2	1,899	....	....	....	....
Custer, Fort, Mont	363	77	44	121	333.33	4.78	13.17	3	7	3,238	45.8	110	—44	14.50
Keogh, Fort, Mont	459	632	118	750	1,633.99	23.91	52.11	13	3	2,365	41.5	110	—42	11.18
Meade, Fort, S. Dak	412	443	175	618	1,500.00	21.32	51.76	16	1	3,624	45.9	105	—30	18.08
Missoula, Fort, Mont	199	128	26	154	773.87	3.61	18.16	5	1	3,330	40.6	101	—27	22.26
Pembina, Fort, N. Dak	59	47	6	53	898.31	1.03	17.41	1	...	900	....	....	....	....
Poplar River, Camp, Mont	75	54	28	82	1,093.33	4.84	64.48	1	...	2,030	....	....	....	....
Saint Paul headquarters, Minn	42	8	1	9	214.29	.66	15.65	1	1	.....	41.3	98	—26	25.95
Snelling, Fort, Minn	432	329	94	423	979.17	17.03	39.41	4	2	840	41.3	98	—26	25.95
Sully, Fort, S. Dak	171	100	24	124	725.15	3.02	17.67	2	2	1,678	45.8	104	—32	24.05
Yates, Fort, N. Dak	267	311	95	406	1,520.60	11.75	44.02	5	3	1,670	40.5	105	—31	16.30
Yellowstone, Fort, Wyo.	100	34	18	52	520.00	2.08	20.77	1	1	6,270	....	....	....	15.12
Field	127	112	40	152	1,196.85	3.10	24.44	....	1	....	....	....	....	....
Total	3,505	2,947	881	3,828	1,092.15	122.99	35.09	59	25	....	....	....	....	....

DEPARTMENT OF THE PLATTE.

Name of station.	Mean strength.	Disease.	Injury.	Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharges for disability.	Deaths.	Altitude of stations.	Mean.	Maximum.	Minimum.	Total precipitation.
D. A. Russell, Fort, Wyo	472	410	105	515	1,091.10	16.45	34.84	3	4	6,205	45.3	91	—4	9.22
McKinney, Fort, Wyo.	276	350	92	442	1,601.45	15.00	54.36	2	3	4,291	45.1	100	—34	8.40
Niobrara, Fort, Nebr	457	513	112	625	1,367.61	18.38	40.22	1	5	2,600	....	....	....	....
Omaha, Fort, Nebr	469	279	73	352	750.53	13.14	28.01	13	4	960	48.8	97	—16	26.66
Omaha headquarters, Nebr.	36	24	1	25	694.44	.59	16.44	....	....	960	48.8	97	—16	26.66
Pilot Butte, Camp, Wyo.	54	36	10	46	851.85	1.32	24.45	1	...	6,260	42.7	98	—16	9.31
Robinson, Fort, Nebr	505	489	160	649	1,285.15	13.61	26.95	2	3	3,764	47.4	102	—21	10.86
Sidney, Fort, Nebr	199	215	56	271	1,361.81	7.49	37.64	1	3	4,326	47.0	102	—15	8.67
Washakie, Fort, Wyo	160	140	48	188	1,175.00	5.15	32.17	....	....	5,462	43.0	97	—14	8.22
Field	37	21	6	27	729.73	.18	4.96	....	....	....	....	....	....	....
Total	2,665	2,477	663	3,140	1,178.24	91.32	34.26	23	22	....	....	....	....	....

TABLE III.—*Military posts in each department, alphabetically arranged, with mean strength, admissions for disease and injury, etc.*—Continued.

DEPARTMENT OF TEXAS.

Name of station.	Mean strength.	Cases.			Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharges for disability.	Deaths.	Altitude of stations.	Temperature.			Total precipitation.
		Disease.	Injury.	Total.							Mean.	Maximum.	Minimum.	
										Feet.	°	°	°	*In.*
Bliss, Fort, Tex	155	301	40	341	2,200.00	7.27	46.89	1	4	3,700	63.8	104	18	10.88
Brown, Fort, Tex	83	144	12	156	1,879.52	5.05	60.90	....	1	47	....	....	27	14.36
Clark, Fort, Tex	314	603	77	680	2,165.60	25.05	79.79	10	2	1,133	71.1	107	23	6.45
Eagle Pass, Camp, Tex	56	105	18	123	2,196.43	3.85	68.74	....	....	800	71.4	109	22	7.13
Hancock, Fort, Tex	53	70	25	95	1,792.45	3.19	60.28	....	....	2,500	59.8	110	3	14.86
McIntosh, Fort, Tex	165	162	39	201	1,218.18	10.85	65.62	3	3	806	73.4	105	24	8.65
Ringgold, Fort, Tex	149	251	38	289	1,939.60	11.40	76.51	2	3	147	73.7	112	26	17.51
Sam Houston, Fort, Tex	501	559	122	681	1,359.28	23.01	45.93	12	3	779	70.1	103	26	18.24
San Antonio headquarters, Tex	34	6	....	6	176.46	.46	13.54	....	2	781	70.1	103	26	18.24
Field	223	127	37	164	735.43	3.42	15.32	....	2	....	....	....	....	....
Total	1,733	2,328	408	2,736	1,578.76	93.53	53.97	28	20	....	....	....	....	....

DEPARTMENT OF THE COLORADO.

Name of station.	Mean strength.	Disease.	Injury.	Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharges for disability.	Deaths.	Altitude of stations.	Mean.	Maximum.	Minimum.	Total precipitation.
Apache, Fort, Ariz	230	207	64	271	1,178.26	7.36	32.00	3	1	5,200	54.5	98	12	15.08
Bayard, Fort, N. Mex	336	238	48	286	851.19	10.38	30.89	7	5	6,750	55.7	99	13	15.47
Bowie, Fort, Ariz	110	79	44	123	1,118.18	4.53	41.14	5	...	4,781	62.3	101	21	12.72
Denver headquarters, Colo.	12	6	....	6	500.00	.08	7.08	....	....	....	50.9	96	—2	8.48
Douglas, Fort, Utah	544	546	100	646	1,187.50	17.27	31.75	8	5	4,920	50.2	99	4	17.35
DuChesne, Fort, Utah	120	91	36	127	1,058.33	3.45	28.77	1	...	5,000	....	....	....	9.02
Grant, Fort, Ariz	291	342	104	446	1,532.65	14.74	50.65	8	...	4,916	62.5	104	23	13.85
Huachuca, Fort, Ariz	292	318	64	382	1,308.22	11.28	38.63	3	3	5,100	61.1	101	29	29.16
Logan, Fort, Colo	359	323	82	405	1,128.13	11.49	32.01	3	3	5,450	50.9	96	—2	6.46
Marcy, Fort, N. Mex	165	155	49	204	1,236.36	7.45	45.13	4	1	7,027	49.4	89	5	14.94
San Carlos, Ariz	175	117	40	157	897.14	5.75	32.86	....	1	2,456	63.4	110	17	12.53
Stanton, Fort, N. Mex	107	65	16	81	757.01	1.99	18.56	3	2	6,152	....	....	....	....
Whipple barracks, Ariz	232	280	30	310	1,336.21	10.82	46.66	6	...	5,318	51.3	95	—2	14.61
Wingate, Fort, N. Mex	351	425	124	549	1,564.10	17.08	48.68	2	...	7,000	....	....	....	....
Field	134	81	43	124	925.37	1.82	13.56	....	1	....	....	....	....	....
Total	3,458	3,273	844	4,117	1,190.57	125.49	36.29	53	22	....	....	....	....	....

DEPARTMENT OF CALIFORNIA.

Name of station.	Mean strength.	Disease.	Injury.	Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharges for disability.	Deaths.	Altitude of stations.	Mean.	Maximum.	Minimum.	Total precipitation.
Alcatraz Island, Cal	118	63	19	82	694.91	2.17	18.37	1	4	135	....	....	....	....
Angel Island, Cal	299	224	23	247	826.09	11.97	40.04	7	3	150	....	....	....	....
Benicia barracks, Cal	212	119	49	168	792.45	4.97	23.43	5	1	160	....	....	....	....
Bidwell, Fort, Cal	47	54	32	86	1,829.79	2.08	44.24	1	...	4,860	....	....	....	....
Mason, Fort, Cal	62	34	12	46	741.94	2.88	46.49	4	...	80	....	....	....	....
Presidio of San Francisco, Cal	490	420	163	583	1,189.80	19.19	39.17	8	3	72	54.3	90	36	17.91
San Diego barracks, Cal	66	81	8	89	1,348.48	8.28	49.73	2	...	6	60.6	88	38	10.29
San Francisco headquarters, Cal	44	2	....	2	45.45	.26	5.98	....	....	....	54.3	90	36	17.91
Field	52	32	21	53	1,019.23	1.17	22.44	....	....	....	....	....	....	....
Total	1,390	1,029	327	1,356	975.54	47.98	34.51	28	11	....	....	....	....	....

DEPARTMENT OF THE COLUMBIA.

Name of station.	Mean strength.	Disease.	Injury.	Total.	Admission rate per 1,000 of mean strength.	Average number of sick daily.	Constantly noneffective per 1,000 of mean strength.	Discharges for disability.	Deaths.	Altitude of stations.	Mean.	Maximum.	Minimum.	Total precipitation.
Boise barracks, Idaho	109	62	25	87	798.17	1.85	16.97	3	1	2,765	48.4	106	0	11.69
Canby, Fort, Wash	106	54	20	74	698.11	2.43	22.93	1	1	8	48.7	82	16	75.40
Sherman, Fort, Idaho	307	176	64	240	781.76	7.25	23.63	1	3	2,140	44.3	98	—23	37.95
Spokane, Fort, Wash	141	58	35	93	659.57	3.84	27.22	1	...	1,400	45.2	102	—29	....
Townsend, Fort, Wash	64	39	10	49	765.62	.95	14.85	....	....	135	47.9	85	— 3	27.94
Vancouver barracks, Wash	440	195	33	228	518.18	6.62	15.06	7	2	50	50.1	94	8	39.95
Walla Walla, Fort, Wash	189	225	59	284	1,502.65	10.83	57.29	6	1	865	50.6	103	—15	22.07
Field	26	19	16	35	1,346.15	.33	12.85	....	....	....	....	....	....	....
Total	1,382	828	262	1,090	788.71	34.11	24.68	19	8	....	....	....	....	....

TABLE IV.—*A general view of the results of disease and injury at each of the various military stations, arranged in the order of their mean strength.*

GROUP 1.—Twenty stations, garrisoned by 400 to 700 men each. Average, 508.

Name of station.	Mean strength.	Admission rate per 1,000 of mean strength.	Constantly noneffective.			Deaths.		Discharges.	
			Daily average in hospital.	Ratios per 1,000 of mean strength of—		No.	Ratio per 1,000 of mean strength.	No.	Ratio per 1,000 of mean strength.
				Cases in hospital.	All cases.				
Fort Leavenworth, Kans	742	1,432.61	18.14	24.45	45.47	3	4.04	16	21.56
Fort Sheridan, Ill	635	1,281.89	15.12	23.81	32.71	2	3.15	8	12.60
Columbus barracks, Ohio	626	2,578.27	47.58	76.01	92.16	7	11.18	5	7.99
Fort Riley, Kans	581	1,358.00	11.22	19.32	38.93	5	8.61	3	5.16
Fort Douglas, Utah	544	1,187.50	11.76	21.61	31.75	5	9.19	8	14.71
Fort Assinniboine, Mont	514	1,182.88	11.15	21.70	31.29	1	1.95	5	9.73
Davids Island, N. Y	511	2,283.76	13.70	26.82	48.44	2	3.91	10	19.57
Fort Robinson, Nebr	505	1,285.15	9.20	18.21	26.95	3	5.94	2	3.96
Fort Sam Houston, Tex	501	1,359.28	16.76	33.45	45.93	3	5.99	12	23.95
Presidio of San Francisco, Cal	490	1,189.80	14.16	28.90	39.17	3	6.12	8	16.33
Jefferson barracks, Mo	484	2,004.13	24.13	49.85	50.59	2	4.13	3	6.20
Fort D. A. Russell, Wyo	472	1,091.10	12.80	27.12	34.84	4	8.47	3	6.36
Fort Omaha, Nebr	469	750.53	8.49	18.10	28.01	4	8.53	13	27.72
Fort Monroe, Va	467	1,379.01	15.06	32.25	46.42	4	8.57	6	12.85
Fort Keogh, Mont	459	1,633.99	12.65	39.49	52.11	3	6.54	13	28.32
Fort Niobrara, Nebr	457	1,367.61	13.18	28.84	40.22	5	10.94	1	2.19
Vancouver barracks, Wash	440	518.18	5.02	11.41	15.06	2	4.55	7	15.91
Fort Snelling, Minn	432	979.17	11.47	26.55	39.41	2	4.63	4	9.26
Fort McPherson, Ga	419	1,391.41	13.19	31.48	54.17	1	2.39	4	9.55
Fort Meade, S. Dak	412	1,500.00	14.93	36.25	51.76	1	2.43	16	38.84
Summary	10,160	1,409.65	299.72	29.50	45.32	62	6.10	147	14.47

GROUP 2.—Eleven stations, garrisoned by 300 to 400 men each. Average, 344.

West Point, N. Y	383	1,396.87	2.94	7.67	26.00	1	2.61	2	5.22
Willets Point, N. Y	370	1,337.84	8.62	23.31	34.24	2	5.41	....	....
Fort Thomas, Ky	368	907.61	8.06	21.90	26.10	4	10.87	5	13.59
Fort Custer, Mont	363	333.33	4.32	11.90	13.17	7	19.28	3	8.26
Fort Logan, Colo	359	1,128.13	8.38	23.34	32.01	3	8.36	3	8.36
Fort Wingate, N. Mex	351	1,564.10	8.94	25.56	48.68	....	....	2	5.70
Fort Bayard, N. Mex	336	851.19	7.66	22.78	30.89	5	14.88	7	20.83
Madison barracks, N. Y	325	600.00	3.67	11.30	21.43	2	6.15	3	9.23
Fort Clark, Tex	314	2,165.60	15.98	50.88	79.79	2	6.37	10	31.85
Fort Sill, Okla	310	1,358.06	9.14	29.48	50.45	4	12.90	5	16.13
Fort Sherman, Idaho	307	781.76	4.11	13.39	23.63	3	9.77	1	3.26
Summary	3,786	1.125.46	81.85	21.62	34.57	33	8.72	41	10.83

GROUP 3.—Seventeen stations, garrisoned by 200 to 300 men each. Average, 260.

Angel Island, Cal	299	826.09	9.10	30.45	40.04	3	10.03	7	23.41
Fort Huachuca, Ariz	292	1,308.22	7.58	25.97	38.63	3	10.27	3	10.27
Fort Grant, Ariz	291	1,532.65	10.61	36.46	50.65	....	....	8	27.49
Washington barracks, D. C	287	2,027.87	14.49	50.48	54.27	1	3.48	7	24.39
Fort Buford, N. Dak	285	968.42	7.63	26.76	34.27	2	7.02	2	7.02
Fort Reno, Okla	282	1,734.04	14.03	49.74	59.28	4	14.18	6	21.28
Fort McKinney, Wyo	276	1,601.45	11.15	40.41	54.36	3	10.87	2	7.25
Fort Yates, N. Dak	267	1,520.60	5.80	21.71	44.02	3	11.24	5	18.73
Fort Adams, R. I	259	1,216.22	5.57	21.50	39.77	3	11.58	2	7.72
Fort Hamilton, N. Y	259	1,772.20	4.20	16.21	36.68	2	7.72	7	27.03
Fort Myer, Va	259	2,034.75	9.43	36.41	62.57	2	7.72	8	30.89
Fort Wayne, Mich	246	1,162.60	4.85	19.71	37.99	1	4.07	10	40.65
Whipple barracks, Ariz	232	1,336.21	8.95	38.57	46.66	....	....	6	25.86
Fort Apache, Ariz	230	1,178.26	5.52	23.98	32.00	1	4.35	3	13.04
Fort Supply, Okla	221	1,497.74	7.67	34.70	44.75	....	....	9	40.72
Fort Niagara, N. Y	219	666.67	2.56	11.67	17.38	2	9.13	....	....
Benicia barracks, Cal	212	792.45	2.96	13.97	23.43	1	4.72	5	23.58
Summary	4,416	1,377.49	132.08	29.91	42.80	31	7.02	90	20.38

TABLE IV.—*A general view of the results of disease and injury at each of the various military stations, etc.*—Continued.

GROUP 4.—Thirty stations, garrisoned by 100 to 200 men each. Average, 144.

Name of station.	Mean strength.	Admission rate per 1,000 of mean strength.	Constantly noneffective.			Deaths.		Discharges.	
			Daily average in hospital.	Ratios per 1,000 of mean strength of—		No.	Ratio per 1,000 of mean strength.	No.	Ratio per 1,000 of mean strength.
				Cases in hospital.	All cases.				
Fort Missoula, Mont	199	773.87	3.06	15.36	18.16	1	5.03	5	25.13
Fort Sidney, Nebr	199	1,361.81	5.08	25.51	37.64	3	15.07	1	5.03
Fort Columbus, N. Y	193	1,088.08	5.15	26.68	38.89			5	25.91
Fort Walla Walla, Wash	189	1,502.65	6.22	32.93	57.29	1	5.29	6	31.75
Mount Vernon barracks, Ala	177	2,096.04	4.53	25.58	48.70	5	28.25	7	39.55
Fort Wadsworth, N. Y	176	1,204.55	3.93	22.32	39.04	1	5.68		
San Carlos, Ariz	175	897.14	4.61	26.36	32.86	1	5.71		
Fort Sully, S. Dak	171	725.15	2.05	10.37	17.67	2	11.70	2	11.70
Fort Brady, Mich	170	970.59	4.57	26.90	34.13			5	29.41
Fort Marcy, N. Mex	165	1,236.36	4.44	26.92	45.13	1	6.06	4	24.24
Fort McIntosh, Tex	165	1,218.18	9.11	55.20	65.62	3	18.18	3	18.18
Fort Washakie, Wyo	160	1,175.00	3.51	21.94	32.17				
Fort Bliss, Tex	155	2,200.00	4.70	30.31	46.89	4	25.81	1	6.45
Fort McHenry, Md	155	1,077.42	4.96	31.99	41.38	2	12.90	2	12.90
Fort Ringgold, Tex	149	1,939.60	9.38	62.96	76.51	3	20.13	2	13.42
Fort Spokane, Wash	141	659.57	3.05	21.61	27.22			1	7.09
Saint Francis barracks, Fla	129	1,767.44	4.47	34.64	46.13	1	7.75	1	7.75
Fort Barrancas, Fla	120	1,883.33	3.69	30.78	44.41	1	8.33	6	50.00
Fort DuChesne, Utah	120	1,058.33	2.45	20.41	28.77			1	8.33
Alcatraz Island, Cal	118	694.91	1.69	14.30	18.37	4	33.90	1	8.47
Leavenworth Prison, Kans	118	779.66	3.86	32.69	43.74	2	16.95	1	8.47
Jackson barracks, La	116	1,241.38	4.05	34.91	42.51	1	8.62	1	8.62
Fort Porter, N. Y	113	1,814.16	2.56	22.67	40.22	2	17.70	1	8.85
Fort Schuyler, N. Y	113	1,345.13	2.24	19.83	31.03			1	8.85
Fort Warren, Mass	113	1,212.39	3.11	27.49	42.16	2	17.70	2	17.70
Fort Bowie, Ariz	110	1,118.18	3.12	28.39	41.14			5	45.45
Boise barracks, Idaho	109	798.17	1.43	13.12	16.97	1	9.17	3	27.52
Fort Stanton, N. Mex	107	757.01	.88	8.19	18.56	2	18.69	3	28.04
Fort Canby, Wash	106	698.11	1.87	17.65	22.93	1	9.43	1	9.43
Fort Yellowstone, Wyo	100	520.00	1.81	18.05	20.77	1	10.00	1	10.00
Summary	4,331	1,210.11	115.56	26.68	37.99	45	10.39	72	16.62

GROUP 5.—Thirty-six stations, garrisoned by 1 to 100 men each. Average, 49.

Fort Brown, Tex	83	1,879.52	4.77	57.47	60.90	1	12.05		
Camp Poplar River, Mont	75	1,093.38	.96	12.79	64.48			1	13.33
San Diego barracks, Cal	66	1,348.48	2.41	36.53	49.73			2	30.30
Rock Island arsenal, Ill	65	1,184.62	.85	13.11	28.20				
Fort Townsend, Wash	64	765.62	.48	7.58	14.85				
Fort Trumbull, Conn	64	593.75	.78	12.16	19.52	1	15.62		
Fort Ontario, N. Y	63	1,190.48	1.47	23.26	32.18			4	63.49
Watervliet arsenal, N. Y	63	1,063.49	.90	14.26	38.62			1	15.87
Fort Mason, Cal	62	741.94	1.98	31.99	46.49			4	64.52
Fort Preble, Me	62	919.35	1.07	17.28	28.10				
Key West barracks, Fla	61	1,360.66	1.84	30.09	42.62			1	16.39
Fort Mackinac, Mich	60	583.33	1.02	16.99	24.25			1	16.67
Fort Pembina, N. Dak	59	898.31	.57	9.66	17.41			1	16.95
Plattsburg barracks, N. Y	58	1,103.45	1.38	23.71	28.20			2	34.48
Sandy Hook, N. J	58	2,362.07			25.98				
Chicago headquarters, Ill	57	350.88			15.67	2	35.09		
Camp Eagle Pass, Tex	56	2,196.43	1.77	31.65	68.74				
Newport barracks, Ky	56	1,589.29	.68	12.18	22.31				
Fort Wood, N. J	56	339.29	.05	.93	1.61				
Camp Pilot Butte, Wyo	54	851.85	1.02	18.92	24.45			1	18.52
Fort Hancock, Tex	53	1,792.45	2.15	40.58	60.28				
Fort Bidwell, Cal	47	1,829.79	1.25	26.58	44.24			1	21.28
San Francisco headquarters, Cal	44	45.45			5.98				
Frankford arsenal, Pa	42	1,571.43			30.20				
Saint Paul headquarters, Minn	42	214.29			15.65	1	23.81	1	23.81
Watertown arsenal, Mass	38	736.84	.33	8.58	15.79				
Omaha headquarters, Nebr	36	694.44			16.44				
New York attending surgeon, N. Y	35	314.28			6.18				
San Antonio headquarters, Tex	34	176.46	.02	.48	13.54	2	58.82		
Allegheny arsenal, Pa	29	793.10	.02	.85	38.64	1	34.48		
Springfield Armory, Mass	29	2,034.48	.04	1.32	35.05				

TABLE IV.—*A general view of the results of disease and injury at each of the various military stations, etc.*—Continued.

GROUP 5.—Thirty-six stations, garrisoned by 1 to 100 men each. Average, 49—Continued.

Name of station.	Mean strength.	Admission rate per 1,000 of mean strength.	Constantly noneffective.			Deaths.		Discharges.	
			Daily average in hospital.	Ratios per 1,000 of mean strength of— Cases in hospital.	Ratios per 1,000 of mean strength of— All cases.	No.	Ratio per 1,000 of mean strength.	No.	Ratio per 1,000 of mean strength.
Augusta arsenal, Ga	25	720.00	.25	10.19	15.45	1	40.00	....	....
Indianapolis arsenal, Ind	24	1,333.33	.33	13.93	44.96	1	41.67	....	....
Columbia arsenal, Tenn	17	2,176.47	....	....	66.08	....	....	....	....
Kennebec arsenal, Me	15	2,666.67	.38	25.39	52.78	....	....	....	....
Denver headquarters, Colo	12	500.00	....	....	7.08	....	....	....	....
Summary	1,766	1,103.06	28.78	16.30	32.23	10	5.66	20	11.32

GROUP 6.—Field.

Name of station.	Mean strength.	Admission rate per 1,000 of mean strength.	Daily average in hospital.	Cases in hospital.	All cases.	Deaths No.	Deaths ratio per 1,000 of mean strength.	Discharges No.	Discharges ratio per 1,000 of mean strength.
Department of Texas	223	735.43	....	....	15.32	2	8.97	....	....
Department of the Missouri	174	890.80	....	....	12.80	1	5.75	....	....
Department of the Colorado	134	925.37	....	....	13.56	1	7.46	....	....
Department of Dakota	127	1,196.85	....	....	24.44	1	7.87	....	....
Department of California	52	1,019.23	....	....	22.44	....	....	....	....
Department of the Platte	37	729.73	....	....	4.96	....	....	....	....
Department of the Columbia	26	1,346.15	....	....	12.85	....	....	....	....
Department of the East	16	500.00	....	....	5.65	....	....	....	....
Summary	789	910.01	....	....	15.64	5	6.34	....	....
Hot Springs, Ark	41	560.98	....	....	....	2	....	17	....
At large	....	....	....	....	....	3	....	26	....
Total for the Army	25,287	1,289.04	684.97	27.09	40.15	191	6.91	413	14.98

TABLE V.—*Twenty posts having the highest admission rates for the year 1893; also their admission rates for the years 1888 to 1892, inclusive.*

Name of station.	Mean strength.	Ratios per 1,000 of mean strength.				Admission rates per 1,000 of mean strength.				
		Admissions.	Deaths.	Discharges.	Constantly non-effective.	1892.	1891.	1890.	1889.	1888.
Columbus barracks, Ohio	626	2,578.27	11.18	7.99	92.16	2,059.23	2,209.89	1,876.49	2,318.86	2,075.66
Sandy Hook, N. J	58	2,362.07	......	......	25.98	1,884.62	1,590.91	1,812.50	....	....
Davids Island, N. Y	511	2,283.76	3.91	19.57	48.44	2,115.32	1,884.82	1,642.86	1,259.07	1,533.12
Fort Bliss, Tex	155	2,200.00	25.81	6.45	46.89	822.43	1,127.27	975.61	1,067.80	1,513.04
Camp Eagle Pass, Tex	56	2,196.43	......	......	68.74	2,113.21	1,788.46	2,053.57	1,145.45	788.46
Fort Clark, Tex	314	2,165.60	6.37	31.85	79.79	1,538.94	1,256.72	1,669.44	1,355.30	1,433.87
Mount Vernon barracks, Ala	177	2,096.04	28.25	39.55	48.70	1,817.68	1,291.93	1,522.52	1,344.83	1,368.42
Fort Myer, Va	259	2,034.75	7.72	30.89	62.57	1,618.64	1,063.58	1,350.36	1,186.05	1,391.30
Washington barracks, D. C	287	2,027.87	3.48	24.39	54.27	1,981.93	1,774.19	1,329.41	1,139.44	1,723.48
Jefferson barracks, Mo	484	2,004.13	4.13	6.20	50.59	875.49	1,068.49	1,000.00	966.98	1,950.07
Fort Ringgold, Tex	149	1,939.60	20.13	13.42	76.51	1,716.42	1,366.07	865.55	562.50	818.84
Fort Brown, Tex	83	1,879.52	12.05	......	60.90	576.27	790.32	1,881.48	3,710.34	3,812.50
Fort Barrancas, Fla	120	1,883.33	8.33	50.00	44.41	1,986.67	2,629.63	1,674.42	1,360.66	1,109.09
Fort Porter, N. Y	113	1,814.16	17.70	8.85	40.22	1,133.33	1,047.17	1,010.53	710.84	948.05
Fort Hancock, Tex	53	1,792.45	......	......	60.28	1,860.00	1,530.61	1,183.67	1,695.65	1,591.84
Fort Hamilton, N. Y	259	1,772.20	7.72	27.03	36.68	2,354.96	2,329.32	1,626.26	1,552.63	1,107.14
Saint Francis barracks, Fla	129	1,767.44	7.75	7.75	46.13	1,967.48	3,121.50	2,015.38	1,568.97	1,378.79
Fort Reno, Okla	282	1,734.04	14.18	21.28	59.28	1,917.72	2,111.92	1,922.30	1,474.51	1,378.5
Fort Keogh, Mont	459	1,633.99	6.54	28.32	52.11	1,264.25	1,328.40	674.85	868.29	1,132.
Fort McKinney, Wyo	276	1,601.45	10.87	7.25	54.36	1,318.52	1,277.98	849.32	587.57	1,287

TABLE VI.—*Twenty posts having the lowest admission rates for the year 1893; also their admission rates for the years 1888 to 1892, inclusive.*

Name of station.	Mean strength.	Ratios per 1,000 of mean strength.				Admission rates per 1,000 of mean strength.				
		Admissions.	Deaths.	Discharges.	Constantly non-effective.	1892.	1891.	1890.	1889.	1888.
Fort Custer, Mont	363	303.33	19.28	8.26	13.17	1,534.18	1,585.56	1,380.66	1,266.86	1,245.33
Fort Wood, N. J	56	339.29	......	......	*1.61	685.19	196.43	500.00	648.65	684.21
Chicago headquarters, Ill.	57	350.88	35.09	......	15.67	192.31	192.31	275.86	322.03	394.32
Vancouver barracks, Wash	440	518.18	4.55	15.91	15.06	727.27	841.49	1,211.90	1,310.70	1,280.84
Fort Yellowstone, Wyo	100	520.00	10.00	10.00	20.77	1,105.26	1,033.90	1,261.54	1,655.73	1,292.86
Fort Mackinac, Mich	60	583.33	......	16.67	24.25	736.84	1,254.55	1,606.38	1,555.56	1,125.00
Fort Trumbull, Conn	64	593.75	15.62	......	19.52	1,048.39	769.23	1,115.38	1,333.33	750.00
Madison barracks, N. Y	325	600.00	6.15	9.23	21.43	1,108.10	1,528.48	1,395.16	1,395.83	1,321.74
Fort Spokane, Wash	141	659.57	......	7.09	27.22	518.52	696.77	1,260.00	1,447.49	1,489.45
Fort Niagara, N. Y	219	666.67	9.13	......	17.38	670.21	808.22	1,131.58	860.22	566.96
Alcatraz Island, Cal	118	694.91	33.90	8.47	18.37	1,025.64	1,097.35	1,076.09	694.74	851.06
Fort Canby, Wash	106	698.11	9.43	9.43	22.93	1,292.45	1,730.00	1,126.98	1,607.14	....
Fort Sully, S. Dak	171	725.15	11.70	11.70	17.67	1,414.77	1,443.66	937.50	1,040.23	1,154.39
Fort Mason, Cal	62	741.94	......	64.52	46.49	689.66	838.71	1,031.25	1,000.00	782.61
Fort Omaha, Nebr	469	750.53	8.53	27.72	28.01	1,223.60	1,234.45	672.29	1,084.88	1,465.71
Fort Stanton, N. Mex	107	757.01	18.69	28.04	18.56	1,250.00	1,427.48	1,661.65	1,217.11	567.90
Fort Townsend, Wash	64	765.62	......	......	14.85	640.62	750.00	827.59	1,000.00	1,076.92
Fort Missoula, Mont	199	773.87	5.03	25.13	18.16	603.17	983.87	1,265.71	867.65	1,026.45
Leavenworth Prison, Kans	118	779.66	16.95	8.47	43.74	843.47	816.51	939.13	1,093.22	752.14
Fort Sherman, Idaho	307	781.76	9.77	3.26	23.63	037.93	879.00	1,838.24	1,306.94	1,271.19
The Army	25,287	1,289.04	6.91	14.93	40.15	1,270.42	1,364.78	1,384.25	1,315.02	1,270.73

* Cases usually transferred to Fort Columbus for treatment.

TABLE VII.—*Twenty posts having the highest noneffective rates for the year 1893; also their noneffective rates for the years 1888 to 1892, inclusive.*

Name of station.	Mean strength.	Constantly noneffective per 1,000 of mean strength.	Average sick daily.	Average of days each case was treated.	Constantly noneffective per 1,000 of mean strength.				
					1892.	1891.	1890.	1889.	1888.
Columbus barracks, Ohio	626	92.16	57.68	13.05	71.98	77.13	77.55	92.74	81.87
Fort Clark, Tex	314	79.79	25.05	13.45	60.77	39.61	65.25	60.05	51.71
Fort Ringgold, Tex	149	76.51	11.40	14.40	70.14	52.05	26.61	23.34	35.44
Camp Eagle Pass, Tex	56	68.74	3.85	11.42	76.30	49.21	59.59	60.17	38.15
Fort McIntosh, Tex	165	65.62	10.85	19.66	68.91	54.97	25.31	53.75	62.22
Camp Poplar River, Mont	75	64.48	4.84	21.52	26.62	18.85	33.47	29.05	35.78
Fort Myer, Va	259	62.57	16.21	11.22	40.55	35.98	37.20	33.47	34.71
Fort Brown, Tex	83	60.90	5.05	11.83	36.91	38.18	65.23	114.44	98.48
Fort Hancock, Tex	53	60.28	3.19	12.27	44.65	49.65	44.95	50.68	42.04
Fort Reno, Okla	282	59.28	16.72	12.48	67.57	59.47	56.53	61.55	46.85
Fort Walla Walla, Wash	189	57.29	10.83	13.91	37.54	52.32	47.71	42.78	45.90
Fort McKinney, Wyo	276	54.36	15.00	12.39	45.36	39.46	30.76	24.63	38.51
Washington barracks, D. C	287	54.27	15.58	9.77	43.22	47.61	51.86	44.21	48.29
Fort McPherson, Ga	419	54.17	22.69	14.21	58.04	61.12	61.16	72.80	......
Fort Keogh, Mont	459	52.11	23.91	11.64	37.46	40.53	25.66	34.20	39.82
Fort Meade, S. Dak	412	51.76	21.32	12.59	44.91	47.04	35.34	35.78	35.56
Fort Grant, Ariz	291	50.65	14.74	12.06	47.61	34.91	32.09	47.45	50.76
Jefferson barracks, Mo	484	50.59	24.49	9.21	32.34	34.62	38.65	48.65	79.71
Fort Sill, Okla	310	50.45	15.64	13.56	37.26	45.67	47.41	44.93	44.73
San Diego barracks, Cal	66	49.73	3.28	13.47	78.88	90.15	122.48	77.07	53.87

TABLE VIII.—*Twenty posts having the lowest noneffective rates for the year 1893; also their noneffective rates for the years 1888 to 1892, inclusive.*

Name of station.	Mean strength.	Constantly noneffective per 1,000 of mean strength.	Average sick daily.	Average days each case was treated.	Constantly noneffective per 1,000 of mean strength.				
					1892.	1891.	1890.	1889.	1888.
Fort Custer, Mont	363	13.17	4.78	14.42	51.14	59.43	57.91	49.72	49.58
Fort Townsend, Wash	64	14.85	.95	7.08	13.66	21.92	16.77	21.92	27.06
Vancouver barracks, Wash	440	15.06	6.62	10.61	28.10	33.51	39.02	45.84	42.19
Chicago headquarters, Ill	57	15.67	.89	16.30	8.72	11.85	14.22	6.41	8.64
Boise barracks, Idaho	109	16.97	1.85	7.76	22.64	34.48	33.01	28.83	53.11
Fort Niagara, N. Y	219	17.38	3.81	9.51	29.37	17.72	28.74	34.47	24.44
Fort Pembina, N. Dak	59	17.41	1.03	7.08	13.03	5.40	15.38	31.37	23.16
Fort Sully, S. Dak	171	17.67	3.02	8.90	39.99	41.00	34.74	46.35	28.01
Fort Missoula, Mont	199	18.16	3.61	8.56	20.64	20.90	28.93	30.00	36.70
Alcatraz Island, Cal	118	18.37	2.17	9.65	40.35	48.15	44.43	23.82	41.66
Fort Stanton, N. Mex	107	18.56	1.99	8.95	43.28	33.63	67.83	39.13	25.06
Fort Trumbull, Conn	64	19.52	1.25	12.00	36.93	22.55	34.19	38.81	20.30
Fort Yellowstone, Wyo	100	20.77	2.08	14.58	23.62	35.20	39.41	62.56	50.26
Madison barracks, N. Y	325	21.43	6.96	13.04	34.40	32.24	30.50	43.93	36.51
Newport barracks, Ky	56	22.31	1.25	5.12	33.70	32.75	51.92	33.25	17.60
Fort Canby, Wash	106	22.93	2.43	11.99	54.85	47.15	35.22	34.05	......
Benicia barracks, Cal	212	23.43	4.97	10.79	21.24	24.14	42.03	37.16	65.30
Fort Sherman, Idaho	307	23.63	7.25	11.03	25.73	25.50	44.15	34.75	36.27
Fort Mackinac, Mich	60	24.25	1.45	15.17	15.48	29.44	26.73	21.24	25.92
Camp Pilot Butte, Wyo	54	24.45	1.32	10.48	31.25	23.66	27.01	33.57	43.27
The Army	25,287	40.15	1,015.37	11.37	39.60	42.01	42.71	44.12	41.91

TABLE IX.—*Twenty posts having the highest admission rates for disease, excluding venereal diseases, vaccina, and alcoholism; also, their ratios for deaths, discharges, and constant noneffectiveness, and the corresponding average rates for the Army, year 1893.*

Name of station.	Mean strength.	Ratios per 1,000 of mean strength.			
		Admissions.	Deaths.	Discharges.	Constantly noneffective.
Sandy Hook, N. J	58	1,982.77	....	....	19.42
Fort Bliss, Tex	155	1,787.10	12.90	....	36.56
Fort Clark, Tex	314	1,729.29	3.19	6.38	60.45
Washington barracks, D. C	287	1,662.01	3.48	20.91	34.08
Camp Eagle Pass, Tex	56	1,642.85	....	....	47.86
Columbus barracks, Ohio	626	1,600.60	9.58	3.20	47.97
Mount Vernon barracks, Ala	177	1,525.41	16.95	28.25	34.34
Fort Myer, Va	259	1,498.06	3.86	27.03	34.84
Fort Ringgold, Tex	149	1,422.83	13.42	6.71	46.57
Fort Brown, Tex	83	1,409.65	....	....	34.39
Davids Island, N. Y	511	1,397.28	3.91	13.70	25.30
Fort Hamilton, N. Y	259	1,356.22	....	19.31	21.48
Jefferson barracks, Mo	484	1,342.97	....	12.07	32.73
Fort Reno, Okla	282	1,312.05	10.64	14.18	42.79
Saint Francis barracks, Fla	129	1,310.08	....	7.75	30.60
Fort Keogh, Mont	459	1,209.16	2.18	10.90	32.95
Fort Barrancas, Fla	120	1,208.34	8.33	41.67	28.69
Fort Porter, N. Y	113	1,185.84	8.85	8.85	21.66
Fort Hancock, Tex	53	1,150.94	....	....	20.57
Fort Supply, Okla	221	1,135.76	....	27.15	30.44
The Army	25,287	893.66	3.66	10.44	25.19

TABLE X.—*Twenty posts having the highest noneffective rates for disease, excluding venereal diseases, vaccina, and alcoholism; also the average number sick daily, the average duration of each case, and the corresponding average rates of the Army, year 1893.*

Name of station.	Mean strength.	Ratios per 1,000 of mean strength constantly non-effective.	Average number of sick daily.	Average number of days each case was treated.
Fort Clark, Tex	314	60.45	21.35	12.41
Columbus barracks, Ohio	626	47.97	42.61	11.67
Camp Eagle Pass, Tex	56	47.86	2.99	9.58
Fort Ringgold, Tex	149	46.57	9.05	13.66
Fort Reno, Okla	282	42.79	15.87	12.07
Camp Poplar River, Mont	75	41.28	4.12	19.53
San Diego barracks, Cal	66	39.85	3.17	13.31
Whipple barracks, Ariz	232	37.71	10.40	12.49
Fort Bliss, Tex	155	36.56	6.55	7.27
Fort Monroe, Va	467	35.97	19.61	11.49
Fort Walla Walla, Wash	189	35.89	8.78	12.23
Fort McIntosh, Tex	165	34.47	7.92	17.52
Fort Myer, Va	259	34.44	14.04	10.11
Fort Brown, Tex	83	34.39	3.43	9.35
Mount Vernon barracks, Ala	177	34.34	7.87	7.39
Washington barracks, D. C	287	34.08	11.70	8.00
Fort Yates, N. Dak	267	34.08	11.65	10.52
Leavenworth Prison, Kans	118	33.97	4.38	18.15
Fort Keogh, Mont	459	32.95	21.63	10.06
Fort McKinney, Wyo	276	32.76	12.20	18.51
The Army	25,287	25.19	637.07	10.[illegible]

TABLE XI.—*The military posts in each department, showing the rates of admission, death, discharge, and constant noneffectiveness for disease, not including venereal diseases, vaccina, nor alcoholism, year 1893.*

DEPARTMENT OF THE EAST.

[Excluding venereal diseases, vaccina, alcoholism and injuries.]

Name of station.	Mean strength.	Ratios per 1,000 of mean strength.			
		Admissions.	Deaths.	Discharges.	Constantly non-effective.
Kennebec arsenal, Me	15	2,600.00	....	....	52.42
Sandy Hook, N. J	58	1,982.77	....	....	19.42
Columbia arsenal, Tenn	17	1,882.36	....	....	53.47
Springfield Armory, Mass	29	1,827.59	....	....	28.86
Washington barracks, D. C	287	1,062.01	3.48	20.91	34.08
Columbus barracks, Ohio	626	1,600.60	9.58	3.20	47.97
Mount Vernon barracks, Ala	177	1,525.41	16.95	28.25	34.34
Fort Myer, Va	259	1,498.06	3.86	27.03	34.44
Frankford arsenal, Pa	42	1,452.38	....	....	22.[illegible]
Davids Island, N. Y	511	1,397.28	3.91	13.70	25.38
Fort Hamilton, N. Y	259	1,355.22	....	19.31	21.48
Saint Francis barracks, Fla	129	1,310.08	....	7.75	30.66
Fort Barrancas, Fla	120	1,208.34	8.33	41.67	22.[illegible]
Fort Porter, N. Y	113	1,185.84	8.85	8.85	21.66
West Point, N. Y	383	1,078.34	....	2.61	17.[illegible]
Fort Monroe, Va	467	1,072.79	4.28	....	35.97
Newport barracks, Ky	56	1,017.88	....	....	13.75
Fort Wadsworth, N. Y	176	914.78	....	....	25.[illegible]
Fort McPherson, Ga	419	890.20	....	7.16	23.46
Fort Schuyler N. Y	113	858.39	....	8.85	16.[illegible]
Plattsburg barracks, N. Y	58	827.59	....	17.24	22.24
Watervliet arsenal, N. Y	63	825.40	....	....	31.7[illegible]
Willets Point, N. Y	370	824.32	....	....	16.38
Key West barracks, Fla	61	819.69	....	16.39	26.[illegible]
Allegheny arsenal, Pa	29	793.10	34.48	....	38.64
Fort Warren, Mass	113	743.36	8.85	8.85	25.58
Jackson barracks, La	116	732.79	8.62	8.62	22.9[illegible]
Fort Columbus, N. Y	193	704.65	....	20.73	25.40
Fort Ontario, N. Y	63	682.54	....	....	11.62
Fort Adams, R. I	259	665.88	7.72	7.72	17.09
Fort McHenry, Md	155	645.16	6.45	12.90	[illegible]

TABLE XI.—*The military posts in each department, showing the rates of admission, death, discharge, and constant noneffectiveness for disease, etc.*—Continued.

DEPARTMENT OF THE EAST—Continued.

[Excluding venereal diseases, vaccina, alcoholism and injuries.]

Name of station.	Mean strength.	Ratios per 1,000 of mean strength. Admissions.	Deaths.	Discharges.	Constantly noneffective.
Augusta arsenal, Ga	25	640.00	40.00	....	15.01
Fort Preble, Me	62	612.89	....	....	19.78
Watertown arsenal, Mass	38	578.94	....	....	12.33
Fort Thomas, Ky	368	573.37	2.72	8.15	13.83
Madison barracks, N. Y	325	446.15	3.07	....	15.54
Fort Trumbull, Conn	64	406.25	15.62	....	12.67
Fort Niagara, N. Y	219	397.26	4.57	....	12.22
New York attending surgeon, N. Y	35	228.57	....	....	5.09
Fort Wood, N. J	56	160.72	....	....	.42
Field	16	309.50	....	....	1.89

DEPARTMENT OF THE MISSOURI.

[Excluding venereal diseases, vaccina, alcoholism and injuries.]

Jefferson barracks, Mo	484	1,342.97	....	2.07	32.73
Fort Reno, Okla	282	1,312.05	10.64	14.18	42.79
Fort Supply, Okla	221	1,135.76	....	27.15	30.44
Fort Sill, Okla	310	1,038.70	9.68	12.90	32.04
Fort Leavenworth, Kans	742	1,018.87	1.34	10.78	27.41
Indianapolis arsenal, Ind	24	1,000.00	....	....	33.00
Fort Sheridan, Ill	635	935.44	1.57	6.31	19.85
Fort Riley, Kans	581	893.29	3.44	5.16	23.07
Rock Island arsenal, Ill	65	861.56	....	....	15.43
Fort Wayne, Mich	246	808.94	4.07	40.65	24.69
Leavenworth Prison, Kans	118	661.03	8.47	8.47	33.97
Fort Brady, Mich	170	658.84	....	11.77	17.87
Fort Mackinac, Mich	60	283.33	....	16.67	15.61
Chicago headquarters, Ill	57	210.54	35.09	....	7.60
Field	174	528.73	....	....	6.70

DEPARTMENT OF DAKOTA.

[Excluding venereal diseases, vaccina, alcoholism and injuries.]

Fort Keogh, Mont	459	1,209.16	2.18	10.90	32.95
Fort Yates, N. Dak	267	1,071.15	7.49	11.24	34.08
Fort Meade, S. Dak	412	941.74	....	21.85	30.09
Fort Assinniboine, Mont	514	834.63	1.95	7.78	20.10
Fort Pembina, N. Dak	59	762.71	....	16.95	14.81
Fort Snelling, Minn	432	675.93	....	6.94	23.41
Fort Missoula, Mont	199	633.16	....	20.10	13.96
Camp Poplar River, Mont	75	613.33	....	13.33	41.28
Fort Buford, N. Dak	285	582.45	3.51	3.51	17.89
Fort Sully, S. Dak	171	543.87	....	11.70	13.69
Fort Yellowstone, Wyo	100	330.00	....	10.00	14.55
Fort Custer, Mont	363	192.85	8.26	2.75	7.78
Saint Paul headquarters, Minn	42	190.48	23.81	23.81	15.52
Field	127	779.53	....	....	13.14

DEPARTMENT OF THE PLATTE.

[Excluding venereal diseases, vaccina, alcoholism and injuries.]

Fort McKinney, Wyo	276	1,126.81	3.63	3.63	32.76
Fort Niobrara, Nebr	457	1,000.00	8.75	2.19	29.00
Fort Sidney, Nebr	199	959.80	15.07	....	25.63
Fort Robinson, Nebr	505	829.71	5.94	1.98	16.57
Fort Washakie, Wyo	160	781.25	....	....	14.64
Fort D. A. Russell, Wyo	472	684.33	2.12	2.12	20.02
Omaha headquarters, Nebr	36	666.66	....	....	13.62
Camp Pilot Butte, Wyo	54	574.07	....	....	18.06
Fort Omaha, Nebr	469	520.25	4.26	21.32	18.41
Field	37	540.54	....	....	3.71

Table XI.—*The military posts in each department, showing the rates of admission, death, discharge, and constant noneffectiveness for disease, etc.*—Continued.

DEPARTMENT OF TEXAS.

[Excluding venereal diseases, vaccina, alcoholism and injuries.]

Name of station.	Mean strength.	Ratios per 1,000 of mean strength.			
		Admissions.	Deaths.	Discharges.	Constantly non-effective.
Fort Bliss, Tex	155	1,787.10	12.90	....	36.56
Fort Clark, Tex	314	1,729.29	3.19	6.38	60.45
Camp Eagle Pass, Tex	56	1,642.85	....	....	47.86
Fort Ringgold, Tex	149	1,422.83	13.42	6.71	46.57
Fort Brown, Tex	83	1,409.65	....	....	34.29
Fort Hancock, Tex	53	1,150.94	....	....	20.57
Fort Sam Houston, Tex	501	996.01	5.99	11.97	25.89
Fort McIntosh, Tex	165	721.22	6.06	12.12	34.47
San Antonio headquarters, Tex	34	176.46	58.82	....	13.54
Field	223	511.22	....	....	8.96

DEPARTMENT OF THE COLORADO.

[Excluding venereal diseases, vaccina, alcoholism and injuries.]

Name of station.	Mean strength.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Whipple barracks, Ariz	232	1,107.77	....	17.24	37.71
Fort Wingate, N. Mex	351	1,045.59	....	2.85	29.79
Fort Huachuca, Ariz	292	1 041.10	3.42	10.27	30.17
Fort Grant, Ariz	291	1,037.80	....	17.18	38.56
Fort Douglas, Utah	544	867.65	3.67	12.87	19.91
Fort Marcy, N. Mex	165	854.55	....	24.24	22.02
Fort Apache, Ariz	230	839.13	....	8.70	17.57
Fort DuChesne, Utah	120	741.67	....	8.33	15.55
Fort Logan, Colo	359	738.17	5.57	8.36	21.65
Fort Bayard, N. Mex	336	633.92	8.92	11.90	29.51
Fort Bowie, Ariz	110	627.28	....	45.45	28.09
San Carlos, Ariz	175	560.01	....	....	16.38
Fort Stanton, N. Mex	107	542.05	....	18.69	12.49
Denver headquarters, Colo	12	500.00	....	....	7.02
Field	134	567.16	7.46	....	7.96

DEPARTMENT OF CALIFORNIA.

[Excluding venereal diseases, vaccina, alcoholism and injuries.]

Name of station.	Mean strength.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Fort Bidwell, Cal	47	1,106.38	....	21.28	27.89
San Diego barracks, Cal	66	1,106.06	....	30.30	33.85
Presidio of San Francisco, Cal	490	724.49	2.04	10.21	19.83
Angel Island, Cal	299	581.94	10.03	13.38	25.08
Alcatraz Island, Cal	118	491.54	16.95	8.47	12.00
Fort Mason, Cal	62	451.61	....	....	12.95
Benicia barracks, Cal	212	438.69	4.72	23.58	14.23
San Francisco headquarters, Cal	44	45.45	....	....	5.98
Field	52	538.46	....	....	9.35

DEPARTMENT OF THE COLUMBIA.

[Excluding venereal diseases, vaccina, alcoholism and injuries.]

Name of station.	Mean strength.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Fort Walla Walla, Wash	189	904.71	5.29	31.76	35.89
Fort Townsend, Wash	64	531.25	....	....	11.43
Boise barracks, Idaho	109	522.95	....	18.35	11.93
Fort Sherman, Idaho	307	475.57	....	3.26	12.89
Fort Canby, Wash	106	424.53	9.43	9.43	10.30
Vancouver barracks, Wash	440	379.55	4.55	13.64	9.82
Fort Spokane, Wash	141	340.42	....	7.09	11.95
Field	26	730.77	....	....	5.86

TABLE XII.—*The monthly prevalence of disease among the white, negro, and Indian troops of the Army during the year 1893.*

Month.		Mean strength.	Admitted to sick report.						Constantly noneffective.					
			Number.			Ratios per 1,000 of mean strength.			Days.			Ratios per 1,000 of mean strength.		
			Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.	Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.	Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.	Venereal, alcoholism, and injuries.	Other diseases.	All diseases and injuries.
Jan...	W.	22,203	669	1,721	2,390	30.13	77.52	107.64	9,512	18,869	28,381	13.82	27.41	41.24
	N.	2,202	65	138	203	29.52	62.67	92.19	843	1,181	2,024	12.35	17.30	29.65
	I.	790	19	30	49	24.05	37.97	62.02	155	458	613	6.33	18.70	25.03
	T.	25,195	753	1,889	2,642	29.89	74.97	104.86	10,510	20,508	31,018	13.46	26.25	39.71
Feb...	W.	22,469	590	1,820	2,410	26.26	81.00	107.26	8,204	18,579	26,783	13.04	29.53	42.57
	N.	2,212	66	170	236	29.85	76.89	106.74	891	1,432	2,323	14.39	23.12	37.51
	I.	761	19	43	62	24.97	56.50	81.47	203	507	710	9.53	23.79	33.32
	T.	25,442	675	2,033	2,708	26.53	79.91	106.44	9,298	20,518	29,816	13.05	28.80	41.85
Mar ..	W.	22,591	613	2,235	2,848	27.13	98.93	126.06	9,102	21,718	30,820	13.00	31.01	44.01
	N.	2,146	51	207	258	23.78	96.50	120.28	822	1,743	2,565	12.36	26.21	38.58
	I.	799	28	71	99	35.04	88.86	123.90	411	741	1,152	16.59	29.92	46.51
	T.	25,535	692	2,513	3,205	27.10	98.41	125.51	10,335	24,202	34,537	13.05	30.57	43.63
Apr ..	W.	22,148	653	1,779	2,432	29.48	80.33	109.81	9,156	19,998	29,154	13.78	30.10	43.88
	N.	2,126	47	123	170	22.11	57.85	79.96	628	1,344	1,972	9.85	21.07	30.92
	I.	784	26	46	72	33.16	58.67	91.83	328	605	933	13.95	25.72	39.67
	T.	25,058	726	1,948	2,674	28.97	77.73	106.71	10,112	21,947	32,059	13.45	29.19	42.64
May ..	W.	22,182	700	1,569	2,269	31.56	70.73	102.28	9,914	17,784	27,698	14.42	25.86	40.28
	N.	2,109	60	121	181	28.45	57.37	85.82	748	1,344	2,092	11.44	20.56	32.00
	I.	772	30	53	83	38.86	68.65	107.51	493	601	1,094	20.60	25.11	45.71
	T.	25,063	790	1,743	2,533	31.52	69.54	101.06	11,155	19,729	30,884	14.36	25.39	39.75
June..	W.	21,932	704	1,369	2,073	32.10	62.42	94.52	9,419	14,472	23,891	14.31	22.00	36.31
	N.	2,186	56	115	171	25.62	52.61	78.23	802	1,126	1,928	12.23	17.17	29.40
	I.	735	14	35	49	19.05	47.62	66.67	228	551	779	10.34	24.99	35.33
	T.	24,853	774	1,519	2,293	31.14	61.12	92.26	10,449	16,149	26,598	14.01	21.66	35.67
July..	W.	21,779	710	1,733	2,443	32.60	79.58	112.18	9,960	17,330	27,290	14.75	25.67	40.42
	N.	2,147	63	120	183	29.34	55.89	85.23	786	1,213	1,999	11.81	18.22	30.03
	I.	706	32	28	60	45.32	39.66	84.98	271	454	725	12.38	20.74	33.13
	T.	24,632	805	1,881	2,686	32.68	76.36	109.04	11,017	18,997	30,014	14.43	24.88	39.31
Aug ..	W.	22,168	663	1,855	2,518	29.91	83.68	113.59	9,156	18,588	27,744	13.32	27.05	40.37
	N.	2,131	74	144	218	34.73	67.58	102.30	760	1,104	1,864	11.50	16.71	28.22
	I.	707	24	33	57	33.95	46.67	80.62	209	295	504	9.54	13.46	23.00
	T.	25,006	761	2,032	2,793	30.43	81.26	111.69	10,125	19,987	30,112	13.06	25.78	38.84
Sept ..	W.	22,260	653	1,788	2,441	29.33	80.32	109.65	9,166	17,892	27.058	13.73	26.79	40.52
	N.	1,994	60	136	196	30.09	68.20	98.29	943	1,225	2,168	15.76	20.48	36.24
	I.	655	19	38	57	29.01	58.01	87.02	254	416	670	12.93	21.17	34.10
	T.	24,909	732	1,962	2,694	29.39	78.77	108.15	10,363	19,533	29,896	13.87	26.14	40.00
Oct ...	W.	22,952	689	1,554	2,243	30.02	67.70	97.72	10,494	17,867	28,361	14.75	25.11	39.86
	N.	2,210	48	120	168	21.72	54.30	76.02	816	1,359	2,175	11.91	19.84	31.75
	I.	623	20	19	39	32.10	30.50	62.60	300	415	715	15.53	21.49	37.02
	T.	25,785	757	1,693	2,450	29.36	65.66	95.01	11,610	19,641	31,251	14.52	24.57	39.10
Nov ..	W.	23,256	649	2,077	2,726	27.91	89.31	117.22	10,115	18,554	28,669	14.50	26.59	41.09
	N.	2,115	49	117	166	23.17	55.32	78.49	684	1,085	1,769	10.78	17.10	27.88
	I.	614	19	30	49	30.94	48.86	79.81	386	223	609	20.95	12.11	33.06
	T.	25,985	717	2,224	2,941	27.59	85.58	113.17	11,185	19,862	31,047	14.35	25.48	39.83
Dec...	W.	23,213	634	2,061	2,695	27.31	88.78	116.09	9,926	20,626	30,552	13.79	28.66	42.45
	N.	2,133	44	191	235	20.63	89.54	110.17	691	1,470	2,161	10.45	22.23	32.68
	I.	629	15	32	47	23.85	50.87	74.72	338	326	664	17.33	16.72	34.05
	T.	25,975	693	2,284	2,977	26.68	87.93	114.61	10,955	22,422	33,377	13.60	27.84	41.45
Year..	W.	22,429	7,927	21,561	29,488	353.43	961.30	1,314.73	114,124	222,277	336,401	13.94	27.15	41.09
	N.	2,143	683	1,702	2,385	318.71	794.21	1,112.93	9,414	15,626	25,040	12.04	19.97	32.01
	I.	715	265	458	723	370.63	640.56	1,011.19	3,576	5,592	9,168	13.70	21.43	35.13
	T.	25,287	8,875	23,721	32,596	350.97	938.07	1,289.04	127,114	243,495	370,609	13.77	26.38	40.15

TABLE XIII.—*Showing for the Army the ratios, per 1,000 of mean strength, of admissions to sick report, deaths, discharges, and constant noneffectiveness for the decade 1882 to 1891.*

Troops.	White.			Negro.			Total.		
Mean strength (corrected for time).	21,641.			2,279.			23,950.		
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Admissions.	Deaths.	Discharges.	Admissions.	Deaths.	Discharges.
Enteric fever (including typho-malarial)	7.37	.90	.05	4.04	1.12	......	7.04	.92	.05
Other specific contagious and infectious diseases (including erysipelas and tonsillitis)	91.78	.26	.03	125.60	.16	......	94.91	.25	.02
Malarial fevers and resulting conditions	128.70	.20	.16	133.50	.40	.12	129.05	.22	.15
Diarrhea (including cholera morbus)	140.89	.07	.24	143.72	......	.20	141.05	.06	.23
Dysentery	9.44	.14	.18	14.70	.28	.12	9.93	.15	.17
Other miasmatic diseases	.04	.03	......	.09	.08	......	.05	.03	......
Gonorrhea and results	34.56	......	.27	34.92	......	.08	34.61	......	.25
Syphilis and results	31.51	.02	3.05	44.57	......	4.27	32.76	.02	3.17
Other venereal diseases	8.31	......	.10	9.17	......	.12	8.35	......	.10
Vaccina	21.68	......	.004	18.47	......	......	22.05	......	.004
Other enthetic diseases	2.39	.01	.02	3.11	......	......	2.46	.01	.02
Alcoholism	55.46	.22	.30	3.95	......	.04	50.50	.20	.27
Other dietic diseases	.65	.01	.08	.18	......	.04	.61	.01	.07
Rheumatism (including muscular)	93.19	.04	2.61	133.33	.04	2.83	96.97	.04	2.63
Other constitutional diseases	9.08	.14	.50	11.05	.32	1.04	9.29	.16	.55
Developmental diseases	......	......	......	......	......	......	......	......	......
Parasitic diseases	3.48	......	......	1.36	......	......	3.27	......	......
Headache and neuralgia	70.35	......	.34	104.72	......	.40	73.58	......	.34
Other diseases of the nervous system	11.62	.54	3.77	9.43	.36	2.99	11.41	.52	3.70
Diseases of the eye	20.91	......	1.28	31.89	......	1.44	21.98	......	1.29
Diseases of the ear	8.86	.01	.84	3.73	......	.28	8.39	.01	.79
Catarrhs and common colds	63.26	......	.04	80.01	......	......	64.77	......	.03
Bronchitis	70.82	.08	.43	77.82	......	.24	71.51	.07	.41
Pneumonia	4.17	.69	.10	8.07	1.79	.20	4.55	.79	.11
Pulmonary phthisis	3.16	.50	1.84	4.34	.80	2.35	3.28	.53	1.89
Pleuritis	2.70	.02	.08	6.01	.04	.12	3.02	.02	.08
Other diseases of the respiratory system	7.55	.08	.45	12.68	.20	.28	8.04	.09	.44
Diseases of the heart and valves	2.77	.28	1.37	3.07	.20	1.16	2.80	.27	1.34
Other diseases of the circulatory system	5.42	.34	1.03	3.11	.52	.52	5.20	.36	.98
Dyspepsia, colic, and constipation	65.82	......	.23	88.65	......	.20	68.05	......	.23
Other diseases of the digestive system (excluding tonsillitis and hernia)	58.16	.59	.66	68.13	.20	.60	59.03	.55	.65
Diseases of the kidneys	1.77	.27	.32	1.75	.24	.52	1.77	.27	.34
Other diseases of the genito-urinary system (nonvenereal)	16.27	.04	1.26	21.27	......	1.67	16.75	.04	1.30
Diseases of the locomotor system (excluding muscular rheumatism)	5.86	.004	1.28	6.62	.08	1.40	5.92	.01	1.29
Diseases of the integumentary system	90.40	.01	.36	65.98	......	.28	88.14	.01	.35
All other diseases	13.51	.03	1.01	17.99	.08	.56	13.95	.04	.97
Heat stroke	2.08	.02	.02	.53	......	.04	1.93	.02	.02
Frostbite and general freezing	4.00	.07	.07	23.12	.04	.32	5.82	.07	.09
Contusions and sprains	140.07	.02	.46	159.29	.04	.48	141.95	.02	.46
Dislocations	2.50	.004	.14	2.11	......	.12	2.47	.004	.14
Fractures (not gunshot)	7.05	.11	.74	5.26	.16	.48	6.88	.11	.71
Incised, lacerated, contused, and punctured wounds	41.13	.12	.27	62.16	.08	.32	43.14	.11	.27
Shot wounds	4.14	1.17	.91	9.21	1.71	1.40	4.62	1.23	.95
All other injuries (including hernia)	42.33	1.35	2.00	41.24	.76	1.67	42.28	1.29	1.96
Total for disease	1,161.88	5.53	24.25	1,297.09	6.90	24.04	1,175.10	5.65	24.23
Total for injuries	243.29	2.86	4.59	302.92	2.79	4.82	249.10	2.86	4.61
Total for all causes	1,405.17	8.39	28.85	1,600.00	9.69	28.86	1,424.20	8.51	28.85

TABLE XIII.—*Showing for the Army the ratios, per 1,000 of mean strength, of admissions to sick report, deaths, discharges, and constant noneffectiveness, for the year 1893.*

Troops.	White.				Negro.				Indian.				Total.			
Mean strength (corrected for time).	22,429.				2,143.				715.				25,287.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly noneffective.	Admissions.	Deaths.	Discharges.	Constantly noneffective.	Admissions.	Deaths.	Discharges.	Constantly noneffective.	Admissions.	Deaths.	Discharges.	Constantly noneffective.
Enteric fever (including typhomalarial)	7.04	.65		1.32	1.40	.42		.20	1.40			.06	6.41	.61		1.19
Other specific, contagious, and infectious diseases (including erysipelas and tonsillitis)	165.59	.37	.04	3.39	172.65	.85		2.81	116.08			2.22	164.78	.40	.04	3.31
Malarial fevers and resulting conditions	99.87			2.61	47.60	.85		1.52	36.36			.39	93.64	.07		2.45
Diarrhea, including cholera morbus	101.48		.04	.89	48.06			.41	32.17			.54	94.99		.04	.84
Dysentery	3.34	.04	.04	.11	6.07			.31				.02	3.48	.04	.04	.12
Other miasmatic diseases	.09	.04		.01	.47	.42		.24					.12	.07		.03
Gonorrhea and results	41.24		.33	2.50	24.73			1.46	54.55			3.08	40.22		.29	2.43
Syphilis and results	14.04		1.42	1.63	7.47		1.69	1.20	20.98		6.83	2.37	13.68		1.59	1.62
Other venereal diseases	19.66		.04	1.40	10.80			1.13	11.19			.64	19.18		.04	1.36
Vaccina	45.48			1.25	41.07			.83	20.98			.41	44.41			1.19
Other enthetic diseases	1.74			.08	1.40			.82					1.66			.10
Alcoholism	37.23	.41		.41	7.47			.09	11.19			.18	33.97	.36		.37
Other dietic diseases	.67			.09					1.40			.02	.63			.08
Rheumatism (including muscular)	64.52		.90	3.19	91.93		1.27	3.68	29.37		1.37	1.12	65.84		.94	3.17
Other constitutional diseases	3.88	.16	.12	.29	1.87		.42	.26	11.19		2.73	2.78	3.92	.14	.22	.36
Developmental diseases	.54		.41	.03	.93			.06					.55		.36	.03
Parasitic diseases	2.23			.06	1.40			.08					2.10			.05
Headache and neuralgia	35.18		.16	.74	33.13			.57	29.37			.26	34.84		.14	.71
Other diseases of the nervous system	7.36	.08	1.67	.92	5.60	.85	1.27	.35	2.80			.25	7.08	.14	1.59	.85
Diseases of the eye	15.03		.98	.74	14.47			.74	81.12			3.45	16.85		.87	.82
Diseases of the ear	7.94		.65	.37	4.67			.20	1.40			.01	7.47		.58	.35
Catarrhs and common colds	63.02			.56	37.80			.36	9.79			.06	59.91			.53
Bronchitis	60.06		.20	1.35	59.73			.99	40.56			.57	67.47		.18	1.30
Pneumonia	4.19	.65	.08	.48	2.80			.87	11.19	2.73		.85	4.27	.65	.07	.48
Pulmonary phthisis	2.32	.45	1.30	.74	2.33	.42	1.27	.46	20.98	6.83	12.30	2.67	2.85	.61	1.59	.77
Pleuritis	2.01			.16	2.80			.14	1.40			.11	2.06			.16
Other diseases of the respiratory system	4.28		.16	.21	5.60			.28	8.39			.36	4.51		.14	.22
Diseases of the heart and valves	5.80	.24	1.22	.70	1.40			.06	4.20		2.73	.39	5.38	.22	1.16	.63
Other diseases of the circulatory system	.62	.04	.20	.16	.47			.001					.59	.04	.18	.14
Dyspepsia, colic, and constipation	53.73		.16	.63	56.00			.58	34.97			.30	53.39		.14	.62
Other diseases of the digestive system (excluding tonsillitis and hernia)	61.62	.24	.41	1.51	52.27			1.13	44.75			1.43	60.39	.22	.36	1.47
Diseases of the kidneys	1.69	.37	.16	.27	2.33	.85		.16					1.70	.40	.14	.26

TABLE XIII.—*Showing for the Army the ratios, per 1,000 of mean strength, of admissions to sick report, death, discharges, etc.*—Continued.

Troops.	White.				Negro.				Indian.				Total.			
Mean strength (corrected for time).	22,429.				2,143.				715				25,287.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly noneffective.	Admissions.	Deaths.	Discharges.	Constantly noneffective.	Admissions.	Deaths.	Discharges.	Constantly noneffective.	Admissions.	Deaths.	Discharges.	Constantly noneffective.
Other diseases of the genito-urinary system (nonvenereal)	12.88	......	.49	.72	10.27	......	.42	.64	13.99	......	1.37	.51	12.69	......	.51	.71
Diseases of the locomotor system (excluding muscular rheumatism)	5.53	......	.85	.53	7.00	......	.85	.55	2.80	......	......	.13	5.58	......	.83	.52
Diseases of the integumentary system	85.34	......	.16	2.03	48.53	......	.42	.96	64.33	......	......	1.45	81.62	......	.18	1.93
All other diseases	27.29	.04	.16	1.10	32.20	......	......	.85	20.98	......	......	1.08	27.52	.04	.14	1.08
Heat stroke	1.78	.04	......	.02	1.40	......	......	.06	......	......	......	......	1.70	.04	......	.03
Frostbite and general freezing	1.52	.04	.04	.11	15.40	......	......	.44	1.40	......	......	.04	2.69	.04	.04	.13
Contusions and sprains	128.32	......	.20	3.17	141.39	......	......	3.04	113.29	......	......	1.90	129.00	......	.18	3.12
Dislocations	2.14	......	.04	.15	2.33	......	......	.11	5.59	......	......	.52	2.25	......	.04	.16
Fractures (not gunshot)	6.64	.16	.45	1.14	7.47	......	.42	1.34	12.59	2.73	......	1.07	6.88	.22	.43	1.16
Incised, lacerated, contused, and punctured wounds	51.54	.04	.12	1.43	47.60	......	.85	1.25	97.90	......	......	2.39	52.52	.04	.18	1.44
Shot wounds	2.99	.73	.49	.47	6.53	2.12	.42	.73	4.20	2.73	......	.29	3.32	.90	.47	.49
All other injuries (including hernia)	45.66	1.79	1.26	1.41	40.13	.85	.85	1.17	36.36	......	1.37	1.20	44.93	1.66	1.23	1.39
Total for disease	1,074.15	3.79	12.37	33.18	850.68	4.66	7.63	23.86	739.86	9.56	27.32	27.72	1,045.76	4.01	12.36	32.24
Total for injuries	240.58	2.81	2.61	7.91	262.25	2.97	2.54	8.15	271.33	5.46	1.37	7.41	243.29	2.89	2.57	7.92
Total for all causes	1,314.73	6.59	14.98	41.09	1,112.93	7.63	10.17	32.01	1,011.19	15.03	28.69	35.13	1,289.04	6.91	14.93	40.15

TABLE XIII.—*Showing for each department and for the Army the ratios, per 1,000 of mean strength, of admissions to sick report, deaths, discharges, and constant non-effectiveness for the year 1893.*

Names of departments	Department of the East.				Department of the Missouri.				Department of Dakota.			
Mean strength (corrected for time).	6,944.				4,169.				3,505.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.	Admissions.	Deaths.	Discharges.	Constantly non-effective.
Enteric fever (including typhomalarial)	6.05	.58	....	1.16	9.59	.72	....	1.72	57	....	....	.10
Other specific contagious and infectious diseases (including erysipelas and tonsillitis)	163.74	.58	....	3.98	154.24	.72	.24	2.96	213.70	.57	....	3.66
Malarial fevers and resulting conditions	141.42	....	....	2.90	160.95	....	....	3.54	10.84	....	....	.26
Diarrhea, including cholera morbus	102.39	....	....	.92	132.16	....	....	1.12	78.17	....	....	.76
Dysentery	2.45	....	....	.07	6.96	....	....	.07	4.28	....	.29	.23
Other miasmatic diseases	.14	....	....	.04	....	....	....	....	.29	.29	....	.15
Gonorrhea and results	51.99	....	.43	2.96	39.82	....	.72	2.88	22.54	....	....	1.34
Syphilis and results	18.43	....	1.58	2.12	12.23	....	1.92	.87	6.85	....	2.00	1.14
Other venereal diseases	29.95	....	.14	2.14	16.31	....	....	1.13	6.56	....	....	.40
Vaccina	100.67	....	....	3.02	34.54	....	....	.80	31.67	....	....	.71
Other enthetic diseases	1.44	....	....	.06	.48	....	....	.07	.29	....	....	.01
Alcoholism	45.51	.14	....	.53	26.15	....	....	.27	19.97	.86	....	.22
Other dietic diseases	.29	....	....	.01	.72	....	....	.02	1.14	....	....	.05
Rheumatism (including muscular)	72.44	....	.58	2.66	61.17	....	.24	2.31	66.76	....	.57	2.75
Other constitutional diseases	4.75	.14	.43	.38	4.80	.24	....	.30	2.85	.29	.29	.76
Developmental diseases	.43	....	.43	.02	.96	....	.48	.06	.29	....	.29	.01
Parasitic diseases	2.59	....	....	.08	1.44	....	....	.04	.57	....	....	.02
Headache and neuralgia	45.22	....	.14	.74	30.22	....	....	.55	26.82	....	....	.34
Other diseases of the nervous system	7.63	.14	.58	1.05	7.68	....	.48	1.03	6.85	.29	.57	.73
Diseases of the eye	14.98	....	.43	.48	21.59	....	.96	1.24	15.12	....	.57	1.19
Diseases of the ear	8.50	....	.58	.41	8.64	....	1.68	.43	4.28	....	.86	.41
Catarrhs and common colds	112.04	....	....	.93	36.94	....	....	.29	31.38	....	....	.36
Bronchitis	66.39	....	.14	1.52	66.92	....	.24	1.21	70.47	....	....	1.56
Pneumonia	4.46	1.01	.14	.66	4.80	.72	....	.46	3.99	....	.29	.69
Pulmonary phthisis	2.16	1.01	1.58	.63	2.88	.24	1.44	.60	2.00	.29	1.71	.37
Pleuritis	1.30	....	....	.17	2.88	....	....	.21	2.00	....	....	.12
Other diseases of the respiratory system	3.17	....	.14	.11	4.32	....	.24	.26	4.28	....	....	.25
Diseases of the heart and valves	5.18	.14	1.73	.64	4.80	....	2.16	.58	6.85	....	.86	1.04
Other diseases of the circulatory system	.43	....	.29	.08	.72	.24	....	.06	.57	....	.29	.03
Dyspepsia, colic, and constipation	56.88	....	.14	.59	50.37	....	....	.54	40.23	....	....	.56
Other diseases of the digestive system (excluding tonsillitis and hernia)	80.79	.14	.58	1.73	45.81	....	....	1.23	55.92	.29	.57	1.38
Diseases of the kidneys	.86	.29	.29	.08	2.88	.48	.48	.26	3.99	.57	....	.29
Other diseases of the genito-urinary system (nonvenereal)	10.37	....	.29	.51	13 67	....	.96	.87	8.84	....	1.43	.43
Diseases of the locomotor system (excluding muscular rheumatism)	4.75	....	.86	.26	5.52	....	.72	.35	5.71	....	1.43	.74
Diseases of the integumentary system	95.62	....	.14	2.19	104.10	....	.24	2.43	55.35	....	.29	1.63
All other diseases	23.04	.14	.29	.82	24.47	....	....	1.21	28.82	....	....	1.40
Heat stroke	1.58	....	....	.02	3.60	.24	....	.05	1.71	....	....	.07
Frostbite and general freezing	1.15	.14	....	.06	1.92	....	....	.04	12.55	....	....	.47
Contusions and sprains	120.96	....	.14	2.89	158.32	....	....	3.72	121.82	....	....	2.74
Dislocations	2.74	....	....	.15	2.64	....	.24	.32	1.71	....	....	.09
Fractures (not gunshot)	7.49	.29	.29	1.06	6.48	.24	.24	1.45	8.84	.57	1.14	1.76
Incised, lacerated, contused, and punctured wounds	52.42	....	....	1.27	45.57	....	....	1.17	53.92	....	.29	1.60
Shot wounds	2.02	.29	.14	.14	4.32	.48	.48	.69	3.71	1.43	.86	.46
All other injuries (including hernia)	44 93	2.30	.86	1.11	52.05	2.16	1.92	1.77	47.07	1.71	2.28	1.81
Total for disease	1,288.45	4.32	11.95	36.63	1,101.70	3.36	13.19	31.96	840.80	3.42	12.27	26.07
Total for injuries	233.29	3.02	1.44	6.71	274.89	3.12	2.88	9.21	251.35	3.71	4.56	9.02
Total for all causes	1,521.74	7.34	13.39	43.34	1,376.59	6.48	16.07	41.17	1,092.15	7.13	16.83	35.09

TABLE XIII.—*Showing for each department and for the Army the ratios, per 1,000 of mean strength, of admissions to sick report, deaths, discharges, and constant non-effectiveness, for the year 1893.*

Names of departments	Department of the Platte.				Department of Texas.				Department of the Colorado.			
Mean strength (corrected for time).	2,665.				1,733.				3,458.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly noneffective.	Admissions.	Deaths.	Discharges.	Constantly noneffective.	Admissions.	Deaths.	Discharges.	Constantly noneffective.
Enteric fever (including typho-malarial)	6.00	1.13	....	.86	16.73	2.31	....	2.58	7.23	.29	....	[illegible]
Other specific, contagious, and infectious diseases (including erysipelas and tonsillitis)	144.83	.38	....	2.51	252.16	....	....	5.54	128.39	....	....	2.21
Malarial fevers and resulting conditions	34.90	....	....	1.13	143.68	....	....	6.27	77.79	.58	....	[illegible]
Diarrhea (including cholera morbus)	50.28	....	....	.50	185.80	....	....	1.63	86.46	....	....	[illegible]
Dysentery	.38	....	....	.01	8.66	....	....	.33	1.45	....	....	.05
Other miasmatic diseases	....	....	....	....	....	....	....	....	....	.29	....	....
Gonorrhea and results	32.65	....	....	1.70	59.43	....	.58	3.74	33.26	....	....	[illegible]
Syphilis and results	7.50	....	1.13	1.34	27.70	....	3.46	2.96	10.99	....	.87	1.13
Other venereal diseases	10.51	....	....	.47	40.97	....	....	3.31	13.30	....	....	[illegible]
Vaccina	24.01	....	....	.44	13.27	....	....	.32	14.46	....	....	.34
Other enthetic diseases	1.50	....	....	.03	8.66	....	....	.54	1.73	....	....	.16
Alcoholism	48.41	....	....	.60	24.81	.58	....	.29	32.39	.58	....	[illegible]
Other dietic diseases	1.50	....	....	.17	....	....	....	....	.58	....	....	[illegible]
Rheumatism (including muscular)	80.30	....	.38	2.95	51.36	....	.58	2.33	72.30	....	2.31	[illegible]
Other constitutional diseases	4.50	....	....	.39	3.46	....	....	.07	2.89	....	.29	[illegible]
Developmental diseases	....	....	....	....	1.15	....	....	.11	1.16	....	.58	[illegible]
Parasitic diseases	1.13	....	....	.01	5.77	....	....	.09	2.89	....	....	[illegible]
Headache and neuralgia	36.77	....	....	.68	45.01	....	....	.58	34.99	....	....	[illegible]
Other diseases of the nervous system	7.13	.38	.38	.59	5.77	....	.58	.67	6.36	.29	1.16	[illegible]
Diseases of the eye	26.64	....	1.50	1.14	13.85	....	.58	.89	17.06	....	1.73	[illegible]
Diseases of the ear	9.01	....	.38	.26	8.66	....	....	.12	6.36	....	....	[illegible]
Catarrhs and common colds	77.30	....	....	.74	9.81	....	....	.07	43.38	....	....	[illegible]
Bronchitis	73.92	....	....	1.27	51.93	....	....	.71	86.18	....	....	[illegible]
Pneumonia	6.38	2.25	....	.47	2.89	.58	....	.06	4.34	....	....	.41
Pulmonary phthisis	3.38	.75	1.50	.76	3.46	1.73	.58	1.43	4.05	.58	3.18	[illegible]
Pleuritis	1.13	....	....	.08	1.15	....	....	.03	3.18	....	....	.12
Other diseases of the respiratory system	6.75	....	....	.41	1.73	....	....	.15	8.68	....	.29	[illegible]
Diseases of the heart and valves	5.25	....	.75	.45	7.50	1.15	1.15	.71	4.05	....	.87	.45
Other diseases of the circulatory system		....	....	.12	.58	....	....	.02	.29	....	.29	.24
Dyspepsia, colic, and constipation	46.15	....	....	.59	92.32	....	.58	1.50	68.83	....	....	[illegible]
Other diseases of the digestive system (excluding tonsillitis and hernia)	67.17	....	....	1.28	45.59	.58	1.15	2.19	56.10	.29	....	[illegible]
Diseases of the kidneys	1.50	.38	....	.24	....	....	....	....	1.16	.29	....	[illegible]
Other diseases of the genito-urinary system (nonvenereal)	17.26	....	....	1.26	14.43	....	.58	.77	13.01	....	.29	[illegible]
Diseases of the locomotor system (excluding muscular rheumatism)	6.38	....	.38	.81	6.35	....	.58	.29	6.36	....	.29	[illegible]
Diseases of the integumentary system	68.30	....	....	1.51	113.10	....	....	2.37	63.62	....	.29	[illegible]
All other diseases	20.64	....	....	.74	75.59	....	....	2.17	31.23	....	.29	[illegible]
Heat stroke	....	....	....	....	5.77	....	....	.05	.29	....	....	[illegible]
Frostbite and general freezing	2.25	....	....	.34	....	....	....	....	.29	....	.29	[illegible]
Contusions and sprains	124.95	....	....	2.46	125.22	....	.58	3.81	128.68	....	.29	[illegible]
Dislocations	2.25	....	....	.15	3.46	....	....	.24	1.73	....	....	[illegible]
Fractures (not gunshot)	7.50	....	.38	1.27	2.31	....	2.31	.75	4.92	.29	....	[illegible]
Incised, lacerated, contused, and punctured wounds	63.04	.38	.75	1.58	55.97	....	....	1.64	54.08	....	.29	[illegible]
Shot wounds	4.13	1.13	.75	.69	4.62	2.31	1.73	1.18	5.21	2.02	.29	[illegible]
All other injuries (including hernia)	44.65	1.50	.38	1.36	38.08	2.31	1.15	1.44	48.87	.87	1.45	[illegible]
Total for disease	929.46	5.25	6.38	26.41	1,343.34	6.92	10.39	44.86	946.50	3.18	12.72	[illegible]
Total for injuries	248.78	3.00	2.25	7.85	235.43	4.62	5.77	9.12	244.07	3.18	2.60	[illegible]
Total for all causes	1,178.24	8.25	8.63	34.26	1,578.77	11.54	16.16	53.97	1,190.57	6.36	15.33	[illegible]

TABLE XIII.—*Showing, for each department and for the Army the ratios, per 1,000 of mean strength, of admissions to sick report, deaths, discharges, and constant noneffectiveness, for the year 1893.*

Names of departments	Department of California.				Department of the Columbia.			
Mean strength (corrected for time).	1,390.				1,382.			
Causes of admission to sick report.	Admissions.	Deaths.	Discharges.	Constantly noneffective.	Admissions.	Deaths.	Discharges.	Constantly noneffective.
Enteric fever (including typhomalarial)	2.88	1.44		.23	2.17			.30
Other specific contagious and infectious diseases (including erysipelas and tonsillitis)	138.84			2.84	128.79	.72		2.16
Malarial fevers and resulting conditions	25.90			.91	20.26			.46
Diarrhea (including cholera morbus)	43.88			.34	36.18			.24
Dysentery					2.89			.04
Other miasmatic diseases	.72			.01				
Gonorrhea and results	47.48		.72	3.13	27.49			1.64
Syphilis and results	21.58		2.88	2.82	4.34			.37
Other venereal diseases	18.70			1.27	10.13			.77
Vaccina	2.88			.05	20.26			.46
Other enthetic diseases	1.44			.19	1.45			.02
Alcoholism	28.06			.27	27.49	2.17		.17
Other dietic diseases	.72			.14				
Rheumatism (including muscular)	51.80		1.44	1.92	31.84			.97
Other constitutional diseases	2.88	.72		.39	2.89		.72	.19
Developmental diseases			.72				.72	
Parasitic diseases	2.88			.13				
Headache and neuralgia	20.86		1.44	.88	15.19			.26
Other diseases of the nervous system	5.76		.72	1.21	7.24		2.17	.71
Diseases of the eye	11.51		1.44	.40	5.79		.72	.23
Diseases of the ear	7.91		.72	.20	5.06			.49
Catarrhs and common colds	44.60			.26	27.49			.18
Bronchitis	48.92		1.44	1.15	47.75		.72	.87
Pneumonia	2.16	.72		.09	2.17			.16
Pulmonary phthisis	1.44	.72	.72	.78	4.34		2.89	.63
Pleuritis					5.79			.61
Other diseases of the respiratory system	2.16			.03	3.62			.07
Diseases of the heart and valves	7.19	.72		.34	3.62	.72	.72	.78
Other diseases of the circulatory system	2.16			.78	1.45		.72	.15
Dyspepsia, colic, and constipation	33.81		.72	.44	25.33			.19
Other diseases of the digestive system (excluding tonsillitis and hernia)	37.41	.72	.72	1.02	54.27	.72	.72	1.30
Diseases of the kidneys	2 16			.92		.72		.08
Other diseases of the genito-urinary system (nonvenereal)	19.42		.72	1.01	12.30			.68
Diseases of the locomotor system (excluding muscular rheumatism)	5.76		1.44	.79	5.06		1.45	.35
Diseases of the integumentary system	79.13			1.70	46.31		.72	1.45
All other diseases	17.26		.72	.60	10.13			1.03
Heat stroke								
Frostbite and general freezing					.72			.02
Contusions and sprains	148.91		1.44	4.61	96.24			2.46
Dislocations	.72			.02	1.45			.03
Fractures (not gunshot)	5.04			.45	11.58			1.72
Incised, lacerated, contused, and punctured wounds	44.60			1.10	51.37		.72	1.85
Shot wounds		.72		.26	1.45	.72		.09
All other injuries (including hernia)	35.97	2.16	2.16	.86	26.77		.72	.52
Total for disease	740.29	5.04	16.55	27.23	599.13	5.06	12.30	17.99
Total for injuries	235.25	2.88	3.60	7.28	189.58	.72	1.45	6.69
Total for all causes	975.54	7.91	20.14	34.51	788.71	5.79	13.75	24.68

TABLE XIV.—*The prevalence of specific febrile and acute infectious diseases in the Army of the United States as compared with the army of Great Britain.*

Disease.	United States.			Great Britain.
	1893.	1892.	1882–1891.	1891.
Cerebro-spinal fever	.03	.08	.05	.02
Chicken pox	.47	.54	.17	.06
Cholera	....	....	....	....
Diptheria	.79	.45	.36	.02
Enteric fever	6.41	5.95	7.04	1.16
Influenza	81.15	74.08	32.61	19.[illegible]
Measles	8.07	7.73	3.77	1.06
Mumps	13.33	6.16	3.26	.78
Scarlet fever	.12	.37	.15	2.17
Smallpox	.04	.04	.11	.01
Varioloid	.08	....	.07	3.96
Tonsillitis	49.91	41.90	49.45	(*)
Typhus fever	....	....	.01	....
Whooping cough	.28	.25	.09	....
Yellow fever	....	....	.15	....

* Not enumerated separately.

TABLE XV.—*Distribution of specific febrile diseases, etc., at United States military posts during the year 1893.*

Name of station.	Specific febrile and acute infectious diseases, excluding influenza, erysipelas, and tonsillitis.													Influenza.	Erysipelas.	Tonsillitis, including quinsy.	Aggregate.	Ratio per 1,000 of mean strength.
	Cerebro-spinal fever.	Chicken pox.	Dengue.	Diphtheria.	Enteric fever, including typho-malarial fever.	Measles.	Mumps.	Scarlet fever.	Smallpox.	Whooping cough.	Other infectious diseases.	Total.	Ratios per 1,000 of mean strength.					
Columbus barracks, Ohio						65	88				14	167	266.77	3	10	30	210	335.46
Fort Ringgold, Tex			117		4							121	812.08				121	812.08
Fort Monroe, Va		9			8	61	10		1			89	190.58	59		14	162	346.90
Fort Brown, Tex			69									69	831.33	1		1	71	855.42
Jefferson barracks, Mo		2			5	1	31			2		41	84.71	15	3	58	117	241.74
Fort Apache, Ariz							40					40	173.91	3		13	56	243.48
Fort Buford, N. Dak							30					30	105.26			19	49	171.93
Washington barracks, D. C					1	7	22					30	104.53	9	1	22	62	216.03
Fort Leavenworth, Kans					7	1	14	2		1		25	33.69	86	2	44	157	211.59
Fort Keogh, Mont				1		1	18				4	24	52.29	124		19	167	363.83
Whipple barracks, Ariz					16		6					22	94.83			24	46	198.28
Fort Myer, Va					3		17			1		21	81.08	28		3	52	200.77
Fort McIntosh, Tex					18							18	109.09			4	22	133.33
Fort Reno, Okla					14		3					17	60.28	44		2	63	223.40
Fort Yates, N. Dak				16	1							17	63.67	63	1	23	104	389.51
Fort Robinson, Nebr					5	7	1					13	25.74	31	1	23	68	134.65
Fort Omaha, Nebr						12						12	25.59	36	2	30	80	170.58
Fort Sill, Okla					5		7					12	38.71	11		7	30	96.77
Fort Supply, Okla					1	4	6				1	12	54.30	24		1	37	167.42
Fort Logan, Colo		1			3	5	1					10	27.86	4	3	17	34	94.71
Fort Meade, S. Dak					1	9						10	24.27	48		26	84	203.88
Alcatraz Island, Cal					3		6					9	76.27	6			15	127.12
Angel Island, Cal							8					8	26.76	33		8	49	163.88
Presidio of San Francisco, Cal						5	3					8	16.33	85		15	108	220.41
Fort Grant, Ariz							5			1	1	7	24.06		1	26	34	116.84
Fort Sheridan, Ill					3		4					7	11.02	74		45	126	198.43
Fort Sidney, Nebr					4	3						7	35.18		5	14	26	130.65
Leavenworth Prison, Kans					1		4			1		6	50.85	9		2	17	144.07
Fort McPherson, Ga					3	3						6	14.32	12		55	73	174.22
Fort Thomas, Ky				1	1	4						6	16.30	49		6	61	165.76
Madison barracks, N. Y					5							5	15.38			10	15	46.15
Fort McKinney, Wyo					4		1					5	18.12			41	46	166.67
Fort Wadsworth, N. Y					1	4						5	28.41	18		10	33	187.50
Fort Wayne, Mich					1	4						5	20.33	27		9	41	166.67
Davids Island, N. Y					2	1	1					4	7.83	13	1	71	89	174.17

TABLE XV.—*Distribution of specific febrile diseases, etc., at United States military posts during the year 1893*—Continued.

Name of station.	Specific febrile and acute infectious diseases, excluding influenza, erysipelas, and tonsillitis.													Influenza.	Erysipelas.	Tonsillitis, including quinsy.	Aggregate.	Ratio per 1,000 of mean strength.
	Cerebro-spinal fever.	Chicken pox.	Dengue.	Diphtheria.	Enteric fever, including typho-malarial fever.	Measles.	Mumps.	Scarlet fever.	Smallpox.	Whooping cough.	Other infectious diseases.	Total.	Ratios per 1,000 of mean strength.					
Fort Douglas, Utah					3	1						4	7.35	44	1	20	69	126.84
Saint Francis barracks, Fla					4							4	31.01	1			5	38.76
Fort Warren, Mass					1						3	4	35.40	10			14	123.89
Fort Barrancas, Fla							3					3	25.00	12	1	5	21	175.00
Fort Brady, Mich					3							3	17.65	1		11	15	88.24
Fort Custer, Mont							3					3	8.26			4	7	19.28
Kennebec arsenal, Me					3							3	200.00	4		2	9	600.00
Mount Vernon barracks, Ala					1	1	1					3	16.95	7		6	16	90.40
Fort Sully, S. Dak				1		2						3	17.54	8		7	18	105.26
Fort Walla Walla, Wash					3							3	15.87	51	2	12	68	359.79
Watervliet arsenal, N. Y					3							3	47.62	7		5	15	238.10
Fort Clark, Tex					2							2	6.37			12	14	44.59
Fort Hamilton, N. Y					1				1			2	7.72			37	39	150.58
Camp Pilot Butte, Wyo					2							2	37.04			3	5	92.59
Fort Porter, N. Y	1				1							2	17.70	2	1	9	14	123.89
Fort Sam Houston, Tex					2							2	3.99	125		11	138	275.45
San Carlos, Ariz					2							2	11.43		2	1	5	28.57
Willets Point, N. Y					2							2	5.41	4		2	8	21.62
Augusta arsenal, Ga					1							1	40.00	6			7	280.00
Benicia barracks, Cal					1							1	4.72			7	8	37.74
Fort D. A. Russell, Wyo					1							1	2.12	18	2	44	65	137.71
Fort DuChesne, Utah				1								1	8.33	11		11	23	191.67
A. & N. G. H., Hot Springs, Ark					1							1	24.39				1	24.39
Fort Mackinac, Mich							1					1	16.67				1	16.67
Fort Marcy, N. Mex					1							1	6.06	15		24	40	242.42
Fort Niobrara, Nebr						1						1	2.19	54	5	25	85	186.00
Fort Pembina, N. Dak								1				1	16.95	4		1	6	101.70
Plattsburg barracks, N. Y										1		1	17.24	9		3	13	224.14
Fort Riley, Kans	1											1	1.72	39		12	52	89.50
San Diego barracks, Cal							1					1	15.15	2		1	4	60.61
Fort Schuyler, N. Y					1							1	8.85	1		6	8	70.80
Fort Snelling, Minn						1						1	2.31	45	2	50	98	226.85
Fort Townsend, Wash							1					1	15.62	15		2	18	281.25
West Point, N. Y						1						1	2.61	47		23	71	185.38
Field			3		3		1		1			8	10.14	8		26	42	53.23

Fort Assinniboine, Mont	...	...	...	...	...	...	...	...	...	...	...	...	...	136	2	8	146	284.05
Fort Bliss, Tex	...	...	...	...	...	...	...	...	...	...	...	...	...	82	...	7	89	574.19
Fort Huachuca, Ariz	...	...	...	...	...	...	...	...	...	...	...	...	...	71	...	1	72	246.58
Vancouver barracks, Wash	...	...	...	...	...	...	...	...	...	...	...	...	...	44	...	3	47	106.82
Fort Missoula, Mont	...	...	...	...	...	...	...	...	...	...	...	...	...	34	...	7	41	206.03
Fort Adams, R. I	...	...	...	...	...	...	...	...	...	...	...	...	...	19	...	11	30	115.88
Sandy Hook, N. J	...	...	...	...	...	...	...	...	...	...	...	...	...	19	...	1	20	344.83
Fort Sherman, Idaho	...	...	...	...	...	...	...	...	...	...	...	...	...	18	1	6	25	81.43
Fort Columbus, N. Y	...	...	...	...	...	...	...	...	...	...	...	...	...	15	...	11	26	134.72
Jackson barracks, La	...	...	...	...	...	...	...	...	...	...	...	...	...	14	...	...	14	120.69
Fort Washakie, Wyo	...	...	...	...	...	...	...	...	...	...	...	...	...	14	...	9	23	143.75
Boise barracks, Idaho	...	...	...	...	...	...	...	...	...	...	...	...	...	13	1	6	20	183.49
Frankford arsenal, Pa	...	...	...	...	...	...	...	...	...	...	...	...	...	13	...	...	13	309.52
Newport barracks, Ky	...	...	...	...	...	...	...	...	...	...	...	...	...	13	...	2	15	267.86
Fort Bowie, Ariz	...	...	...	...	...	...	...	...	...	...	...	...	...	12	...	8	20	181.82
Springfield Armory, Mass	...	...	...	...	...	...	...	...	...	...	...	...	...	12	...	6	18	620.69
Rock Island arsenal, Ill	...	...	...	...	...	...	...	...	...	...	...	...	...	10	...	...	10	153.85
Fort Trumbull, Conn	...	...	...	...	...	...	...	...	...	...	...	...	...	8	...	...	8	125.00
Fort Preble, Me	...	...	...	...	...	...	...	...	...	...	...	...	...	6	...	1	7	112.90
Denver headquarters, Colo	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	5	416.67
Omaha headquarters, Nebr	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	4	111.11
Allegheny arsenal, Pa	...	...	...	...	...	...	...	...	...	...	...	...	...	3	1	...	4	137.93
Chicago headquarters, Ill	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	1	4	70.18
Indianapolis arsenal, Ind	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	3	125.00
Watertown arsenal, Mass	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	1	4	105.26
Fort Mason, Cal	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	2	32.26
New York attending surgeon, N. Y	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	1	3	85.71
Fort Niagara, N. Y	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	3	5	22.83
Saint Paul headquarters, Minn	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	2	47.62
Fort Wood, N. J	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	1	3	53.57
Fort Bayard, N. Mex	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	28	30	89.29
San Antonio, Tex	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	29.41
San Francisco headquarters, Cal	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	22.73
Fort Canby, Wash	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	2	3	28.30
Fort Wingate, N. Mex	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	30	30	85.47
Fort Yellowstone, Wyo	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	13	13	130.00
Fort McHenry, Md	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	7	45.16
Fort Ontario, N. Y	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3	47.62
Fort Stanton, N. Mex	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3	28.04
Fort Bidwell, Cal	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	42.55
Fort Hancock, Tex	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	37.74
Key West barracks, Fla	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	32.79
Camp Poplar River, Mont	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	26.67
Total	2	12	189	20	162	204	337	3	3	7	23	962	...	2,052	53	1,262	4.329	...
Admission rates per 1,000 of mean strength	.06	.47	7.47	.79	6.41	8.07	13.33	.12	.12	.28	.91	38.04	...	81.15	2.10	49.91	171.19	...

TABLE XVI.—*Twenty posts giving the highest admission rates for malarial diseases, rheumatism, diarrheal and venereal diseases, respectively, during 1893.*

I.—MALARIAL DISEASES.

Name of station.	Mean strength.	Ratios per 1,000 of mean strength.			
		Admissions.	Deaths.	Discharges for disability.	Constantly non-effective.
Washington barracks, D. C	287	853.66			11.80
Fort Myer, Va	250	640.93			10.09
Jefferson barracks, Mo	484	522.73			10.65
Fort Bliss, Tex	155	447.42			11.15
Fort Hamilton, N. Y	259	359.07			4.28
Mount Vernon barracks, Ala	177	344.63			4.52
Fort Clark, Tex	314	334.39			19.53
Fort Sill, Okla	310	296.78			4.45
Fort Huachuca, Ariz	292	270.55			12.35
Fort Barrancas, Fla	120	266.67			4.79
Fort Grant, Ariz	291	216.50			7.54
Fort Reno, Okla	282	216.31			6.40
Whipple barracks, Ariz	232	198.28			5.59
Fort Riley, Kans	581	191.03			4.30
Fort Wadsworth, N. Y	176	187.50			4.47
Fort Hancock, Tex	53	169.80			10.03
Fort McHenry, Md	155	167.75			2.63
Fort Washakie, Wyo	160	143.75			1.62
Fort Porter, N. Y	113	141.59			1.21
Jackson barracks, La	116	129.31			3.71
The Army	25,287	93.64	.07		2.45

II.—RHEUMATISM.

[Muscular and articular.]

Name of station.	Mean strength.	Admissions.	Deaths.	Discharges for disability.	Constantly non-effective.
Sandy Hook, N. J	58	224.13			2.08
Rock Island arsenal, Ill	65	184.62			6.13
Saint Francis barracks, Fla	129	162.79			1.63
Plattsburg barracks, N. Y	58	155.16			5.72
Fort Wingate, N. Mex	351	148.14			5.71
Fort Missoula, Mont	199	135.68		5.03	2.62
Fort Brown, Tex	83	120.48			3.69
Fort Pembina, N. Dak	59	118.64		16.95	5.39
Davids Island, N. Y	511	117.42		1.96	2.38
Mount Vernon barracks, Ala	177	107.34			2.99
Camp Eagle Pass, Tex	56	107.14			1.32
Fort McKinney, Wyo	276	101.45		3.62	2.85
Fort Marcy, N. Mex	165	96.97		6.06	6.36
West Point, N. Y	383	96.61			1.79
Fort D. A. Russell, Wyo	472	95.34			4.21
Jackson barracks, La	116	94.83			1.37
Fort Myer, Va	259	92.66		3.86	2.86
Fort Assiniboine, Mont	514	91.44			3.60
Fort Buford, N. Dak	285	91.23			2.31
San Diego barracks, Cal	66	90.91			6.27
The Army	25,287	65.84		.94	3.1[illegible]

TABLE XVI.—*Twenty posts giving the highest admission rates for malarial diseases, rheumatism, diarrheal and venereal diseases, respectively, during 1893*—Continued.

III.—DIARRHEAL DISEASES.

Name of station.	Mean strength.	Ratios per 1,000 of mean strength.			
		Admissions.	Deaths.	Discharges for disability.	Constantly non-effective.
Fort Clark, Tex	314	455.42			5.16
Sandy Hook, N. J	58	327.58			2.27
Fort Hancock, Tex	53	320.73			2.60
Saint Francis barracks, Fla	129	263.56			1.77
Fort Sheridan, Ill	635	236.30			1.40
Fort Ontario, N. Y	63	222.22			1.30
Fort Hamilton, N. Y	259	220.08			2.04
Fort Keogh, Mont	459	211.31			1.89
Fort Pembina, N. Dak	59	203.40			1.81
Jefferson barracks, Mo	464	200.42			2.46
Fort Barrancas, Fla	120	183.34			1.94
San Diego barracks, Cal	66	181.81			1.74
Newport barracks, Ky	56	178.57			2.49
Fort Supply, Okla	221	176.46			1.56
Fort Reno, Okla	282	173.75			2.17
San Carlos, Ariz	175	171.42			1.46
Fort Adams, R. I	259	169.88			1.68
Fort Monroe, Va	467	169.17			1.77
Fort Schuyler, N. Y	113	168.14			1.82
Fort Bliss, Tex	155	167.74			1.63
The Army	25,287	98.47	.04	.08	.96

IV.—VENEREAL DISEASES.

Name of station.	Mean strength.	Admissions.	Deaths.	Discharges for disability.	Constantly non-effective.
Columbus barracks, Ohio	626	333.88		4.79	24.08
Fort Brown, Tex	83	265.05			19.54
Fort Ringgold, Tex	149	234.90		6.71	15.78
Fort McIntosh, Tex	165	218.18			17.62
Jackson barracks, La	116	206.88			15.71
Fort Ontario, N. Y	63	190.47		15.87	14.78
Washington barracks, D. C	287	167.25		3.48	13.50
Fort Clark, Tex	314	165.61		12.73	11.85
Saint Francis barracks, Fla	129	162.79			11.38
Camp Eagle Pass, Tex	56	160.72			15.31
Mount Vernon barracks Ala	177	158.20		11.30	6.91
Fort Thomas, Ky	368	146.74		2.72	7.89
Angel Island, Cal	299	140.47		6.69	11.37
Fort Hancock, Tex	53	132.07			9.10
Key West barracks, Fla	61	131.14			8.98
Fort Wayne, Mich	246	126.02			7.78
Fort McHenry, Md	155	122.58			8.83
Fort Barrancas, Fla	120	116.66		8.33	7.94
Fort Walla Walla, Wash	189	116.40			10.84
Fort Porter, N. Y	113	115.04			7.12
The Army	25,287	73.06		1.92	5.41

TABLE XVII.—*Twenty posts giving the highest noneffective rates for malarial diseases, rheumatism, diarrheal and venereal diseases, respectively, during 1893.*

I.—MALARIAL DISEASES.

Name of station.	Mean strength.	Constantly noneffective per 1,000 of mean strength.	Average number sick daily.	Average number of days each case was treated.
Fort Clark, Tex	314	19.53	6.13	21.31
Fort Huachuca, Ariz	292	12.35	3.61	16.68
Washington barracks, D. C	287	11.80	3.39	5.04
Fort Bliss, Tex	155	11.15	1.73	8.53
Jefferson barracks, Mo	484	10.65	5.16	7.44
Fort Myer, Va	259	10.09	2.61	5.75
Fort Hancock, Tex	53	10.03	.53	21.56
Fort Grant, Ariz	291	7.54	2.19	12.71
Camp Eagle Pass, Tex	56	6.80	.38	23.17
Fort Preble, Me	62	6.67	.41	75.50
Fort Reno, Okla	282	6.40	1.81	10.80
Whipple barracks, Ariz	232	5.50	1.28	10.13
Columbus barracks, Ohio	626	5.34	3.34	22.18
Fort Barrancas, Fla	120	4.79	.58	6.56
Mount Vernon barracks, Ala	177	4.52	.80	4.79
Fort Wadsworth, N. Y	176	4.47	.79	8.70
Fort Sill, Okla	310	4.45	1.38	5.48
Fort Riley, Kans	581	4.30	2.50	8.22
Fort Hamilton, N. Y	259	4.28	1.11	4.35
Leavenworth Prison, Kans	118	4.13	.49	35.60
The Army	25,287	2.45	62.74	9.57

II.—RHEUMATISM.

Fort Warren, Mass	113	8.97	1.01	52.86
Fort Ringgold, Tex	149	6.66	.99	36.20
Fort Marcy, N. Mex	165	6.36	1.05	23.94
San Diego barracks, Cal	66	6.27	.41	25.17
Rock Island arsenal, Ill	65	6.19	.40	12.25
Plattsburg barracks, N. Y	58	5.72	.33	13.44
Fort Wingate, N. Mex	351	5.71	2.01	14.08
Fort Bowie, Ariz	110	5.68	.62	112.00
Fort Grant, Ariz	291	5.51	1.60	25.43
Camp Poplar River, Mont	75	5.41	.41	29.60
Fort Ontario, N. Y	63	5.26	.33	121.00
Fort Pembina, N. Dak	59	5.20	.31	16.00
Fort Niobrara, Nebr	457	5.01	2.29	20.37
Fort Riley, Kans	581	4.81	2.79	23.18
Fort McIntosh, Tex	165	4.40	.73	24.09
San Carlos, Ariz	175	4.38	.77	23.33
Columbus barracks, Ohio	626	4.32	2.71	23.52
Fort D. A. Russell, Wyo	472	4.21	1.99	16.13
Fort McPherson, Ga	419	4.20	1.76	18.37
Fort Brown, Tex	83	3.89	.32	11.80
The Army	25,287	3.17	80.04	17.55

TABLE XVII.—*Twenty posts, giving the highest noneffective rates for malarial diseases, rheumatism, diarrheal and venereal diseases, respectively, during 1893*—Continued.

III.—DIARRHEAL DISEASES.

Name of station.	Mean strength.	Constantly noneffective per 1,000 of mean strength.	Average number sick daily.	Average number of days each case was treated.
Fort Clark, Tex	314	5.16	1.62	4.13
Fort Hancock, Tex	53	2.69	.14	3.06
Newport barracks, Ky	56	2.49	.14	5.10
Jefferson barracks, Mo	484	2.46	1.19	4.48
Sandy Hook, N. J	58	2.27	.13	2.53
Mount Vernon barracks, Ala	177	2.26	.40	5.08
Fort Reno, Okla	282	2.17	.61	4.55
Fort Hamilton, N. Y	259	2.04	.53	3.89
Fort Barrancas, Fla	120	1.94	.23	3.86
Fort Snelling, Minn	432	1.91	.82	7.00
Fort Keogh, Mont	459	1.89	.87	3.28
Fort Schuyler, N. Y	113	1.82	.21	3.95
Fort Pembina, N. Dak	59	1.81	.11	3.25
Fort Monroe, Va	467	1.77	.82	3.81
Saint Francis barracks, Fla	129	1.77	.23	2.44
San Diego barracks, Cal	66	1.74	.12	3.50
Leavenworth Prison, Kans	118	1.67	.20	4.80
Fort Bliss, Tex	155	1.63	.25	3.54
Fort Supply, Okla	221	1.56	.35	3.23
Fort Sam Houston, Tex	501	1.50	.74	3.51
The Army	25,287	.96	21.24	3.23

IV.—VENEREAL DISEASES.

Columbus barracks, Ohio	626	24.08	15.77	26.33
Fort Mason, Cal	62	19.71	1.22	74.33
Fort Brown, Tex	83	19.54	1.62	26.91
Fort McIntosh, Tex	165	17.62	2.91	29.50
Fort Ringgold, Tex	149	15.78	2.35	24.51
Jackson barracks, La	116	15.71	1.82	27.71
Camp Eagle Pass, Tex	56	15.31	.86	34.78
Fort Ontario, N. Y	63	14.78	.93	28.33
Washington barracks, D. C	287	13.50	3.87	29.44
Fort Clark, Tex	314	11.85	3.72	26.12
Saint Francis barracks, Fla	129	11.38	1.47	25.52
Angel Island, Cal	299	11.37	3.40	29.55
Fort Sill, Okla	310	11.29	3.50	39.94
Fort Walla Walla, Wash	189	10.84	2.05	34.00
Fort McKinney, Wyo	276	10.14	2.80	56.72
Fort McPherson, Ga	419	10.07	4.22	32.77
Camp Poplar River, Mont	75	9.54	.72	52.20
San Carlos, Ariz	175	9.19	1.61	36.69
Fort Hancock, Tex	53	9.10	.48	25.14
Key West barracks, Fla	61	8.98	.55	25.00
The Army	25,287	5.41	136.70	27.00

TABLE XVIII.—*Prevalence of alcoholism at the various posts and its influence on the effective force of the garrisons for the year 1893.*

Name of station.	Mean strength.	Ratio per 1,000 of mean strength.	
		Admissions.	Constantly non-effective.
Fort Porter, N. Y	113	212.39	1.50
Newport barracks, Ky	56	178.56	.93
Willets Point, N. Y	370	170.27	2.07
Key West barracks, Fla	61	163.93	1.75
Jackson barracks, La	116	146.54	1.51
Fort Warren, Mass	113	106.19	.75
Fort Sidney, Nebr	199	100.50	.99
San Diego barracks, Cal	66	90.91	.66
Fort D. A. Russell, Wyo	472	84.74	1.22
Fort Brady, Mich	170	82.35	.82
Fort Barrancas, Fla	120	75.00	.91
Mount Vernon barracks, Ala	177	73.45	1.52
Camp Eagle Pass, Tex	56	71.43	.34
Benicia barracks, Cal	212	70.75	.75
Sandy Hook, N. J	58	68.96	.47
Fort McKinney, Wyo	276	68.84	.74
Fort McPherson, Ga	419	66.83	.87
Fort Logan, Colo	359	64.06	.63
Saint Francis barracks, Fla	129	62.02	.62
Fort Brown, Tex	83	60.24	.63
Columbia arsenal, Tenn	17	58.82	1.01
Fort Wayne, Mich	246	56.91	.72
Fort Niobrara, Nebr	457	56.89	.76
Fort Wingate, N. Mex	351	54.13	.54
Fort Sherman, Idaho	307	48.86	.29
Fort Yates, N. Dak	267	48.69	.26
Rock Island arsenal, Ill	65	46.15	.84
Washington barracks, D. C	287	45.30	.73
Fort Schuyler, N. Y	113	44.25	.24
Fort Hamilton, N. Y	259	42.47	.38
Indianapolis arsenal, Ind	24	41.67	.11
Augusta arsenal, Ga	25	40.00	.22
Fort McHenry, Md	155	38.71	.34
Fort Douglas, Utah	544	38.60	.30
Fort Washakie, Wyo	160	37.50	.43
Fort Stanton, N. Mex	107	37.38	.33
Fort Walla Walla, Wash	189	37.04	.19
Fort Niagara, N. Y	219	36.53	.29
Fort McIntosh, Tex	165	36.36	.28
Fort Wood, N. J	56	35.71	.10
Fort Reno, Okla	282	35.46	.25
Fort Apache, Ariz	230	34.78	.55
Whipple barracks, Ariz	232	34.48	.20
Fort Mackinac, Mich	60	33.33	.46
Fort Assinniboine, Mont	514	33.07	.25
Fort Sheridan, Ill	635	33.07	.30
Fort Preble, Me	62	32.26	.27
Fort Sam Houston, Tex	501	31.94	.38
Fort Ontario, N. Y	63	31.75	.43
Fort Columbus, N. Y	193	31.09	.57
Fort Marcy, N. Mex	165	30.30	.55
Fort Monroe, Va	467	29.98	.30
Fort Robinson, Nebr	505	29.70	.22
New York attending surgeon, N. Y	35	28.57	.23
Fort Ringgold, Tex	149	26.84	.85
Watertown arsenal, Mass	38	26.32	.14
Fort Keogh, Mont	459	26.14	.45
Fort Sill, Okla	310	25.81	.22
Fort Clark, Tex	314	25.48	.24
Presidio of San Francisco, Cal	490	24.49	.21
Fort Grant, Ariz	291	24.05	.19
Frankford arsenal, Pa	42	23.81	.07
Fort Myer, Va	259	23.17	.31
Fort Snelling, Minn	432	23.15	.39
Fort Thomas, Ky	368	21.74	.17
Davids Island, N. Y	511	21.53	.15
Fort Bidwell, Cal	47	21.28	.67
Fort Spokane, Wash	141	21.28	[illegible]
Fort Riley, Kans	581	20.65	.16
Fort Huachuca, Ariz	292	20.55	.26
Vancouver barracks, Wash	440	20.45	.17
Fort Leavenworth, Kans	742	20.21	.19
Fort Meade, S. Dak	412	19.42	.17
Fort Adams, R. I	259	19.30	.14
Fort Canby, Wash	106	18.87	.08
Madison barracks, N. Y	325	18.46	.23
Boise barracks, Idaho	109	18.35	.15
Fort Bowie, Ariz	110	18.18	[illegible]
Fort Supply, Okla	221	18.10	.37
Fort Bayard, N. Mex	336	17.86	.24
Fort Sully, S. Dak	171	17.54	.11
Plattsburg barracks, N. Y	58	17.24	[illegible]
San Carlos, Ariz	175	17.14	.14
Fort Pembina, N. Dak	59	16.95	.09
Angel Island, Cal	299	13.38	.06
Fort Wadsworth, N. Y	176	11.36	1.30
Fort Yellowstone, Wyo	100	10.00	.14
Alcatraz Island, Cal	118	8.47	.05
Leavenworth prison, Kans	118	8.47	.09
Fort Omaha, Nebr	469	6.40	[illegible]
Columbus barracks, Ohio	626	6.39	[illegible]
Fort Missoula, Mont	199	5.03	.04
Jefferson barracks, Mo	484	4.13	.02
Fort Buford, N. Dak	285	3.51	[illegible]
West Point, N. Y	383	2.61	[illegible]
Field	789	6.34	.14
The Army	25,287	33.97	[illegible]

TABLE XIX.—*Number of applicants for enlistment examined during the year 1893, with the number accepted, rejected on primary examination, and declined, and ratios per thousand.*

	White.		Negro.		Indian.*		Total.	
	Number.	Ratio per 1,000 white examined.	Number.	Ratio per 1,000 negroes examined.	Number.	Ratio per 1,000 Indians examined.	Number.	Ratio per 1,000 examined.
Examined	19,036	1,000.00	1,191	1,000.00	105	1,000.00	20,332	1,000.00
Accepted	8,208	431.18	524	439.97	81	771.43	8,813	433.45
Rejected	9,906	520.38	639	536.52	23	219.05	10,568	519.77
Declined	922	48.43	28	23.51	1	9.52	951	46.77

*Including only applicants for enlistment as soldiers for the regular term of five years. In addition to these, 179 Indian applicants for enlistment as scouts were examined, of whom all were accepted.

TABLE XX.—*Causes of rejection among 20,332 recruits examined during the year 1893, with corresponding ratios per 1,000 of each race examined.*

Number examined	White, 19,036.				Negro, 1,191.			
Cause of rejection.	Rejected on primary examination.	Rejected on secondary examination.	Total.	Ratios per 1,000.	Rejected on primary examination.	Rejected on secondary examination.	Total.	Ratios per 1,000.
Miasmatic diseases	2	....	2	.11	....	....	....	....
Enthetic diseases	268	14	282	14.81	40	....	40	33.59
Dietic diseases	164	....	164	8.61	4	....	4	3.36
Constitutional diseases	29	4	33	1.73	2	....	2	1.68
Parasitic diseases	26	....	26	1.37	....	....	....	....
Diseases of the nervous system	17	11	28	1.47	1	....	1	.84
Diseases of the eye	1,540	21	1,561	82.00	61	....	61	51.22
Diseases of the ear	115	8	123	6.46	3	....	3	2.52
Diseases of the nose	9	3	12	.63	1	....	1	.84
Diseases of the respiratory organs	38	8	46	2.47	....	....	....	....
Diseases of the circulatory organs	475	25	500	26.27	25	1	26	21.83
Diseases of the digestive system	521	2	523	27.47	17	....	17	14.27
Diseases of the lymphatic system	2	....	2	.11	....	....	....	....
Diseases of the genito-urinary system	817	17	834	43.81	35	....	35	29.39
Diseases of the locomotor system	375	6	381	20.01	27	1	28	23.51
Diseases of the integumentary system	139	5	144	7.56	4	....	4	3.36
Hernia	145	8	153	8.04	15	....	15	12.59
Other injuries	110	16	126	6.62	4	....	4	3.36
Minors	507	....	507	26.63	24	....	24	20.15
Over age	185	....	185	9.72	15	....	15	12.59
Over height	14	....	14	.74	2	....	2	1.68
Under height	353	....	353	18.54	25	....	25	20.99
Over weight and obesity	46	....	46	2.42	3	....	3	2.52
Under weight	909	2	911	47.86	37	....	37	31.07
Imperfect physique	805	10	815	42.81	61	....	61	51.22
Mental insufficiency	17	1	18	.95	3	1	4	3.36
Married or having dependent relatives	123	....	123	6.46	19	....	19	15.95
Illiteracy	36	....	36	1.89	7	....	7	5.88
Imperfect knowledge of English	308	....	308	16.18	13	....	13	10.92
Discharged from previous service for disability or by order	37	....	37	1.94	2	....	2	1.68
Deserters from previous service and ex-convicts	7	1	8	.42	1	....	1	.84
Fraudulent enlistment	....	95	95	4.99	....	5	5	4.20
Character, bad or doubtful	207	6	213	11.19	17	....	17	14.27
References, none or unsatisfactory	617	....	617	32.41	29	....	29	24.35
General unfitness and undesirable	695	....	695	36.51	67	....	67	56.26
No vacancies	143	....	143	7.51	63	....	63	52.90
Unclassified	105	4	109	5.73	12	....	12	10.08
Total	9,906	267	10,173	534.41	639	8	647	543.24

TABLE XX.—*Causes of rejection among 20,332 recruits examined during the year 1893 with corresponding ratios per 1,000 of each race examined*—Continued.

Number examined	Indian, 105.				Total, 20,332.			
Cause of rejection.	Rejected on primary examination.	Rejected on secondary examination.	Total.	Ratios per 1,000.	Rejected on primary examination.	Rejected on secondary examination.	Total.	Ratios per 1,000.
Miasmatic diseases					2		2	.10
Enthetic diseases	5		5	47.62	313	14	327	16.08
Dietic diseases					168		168	8.26
Constitutional diseases	1	1	2	19.05	32	5	37	1.82
Parasitic diseases					26		26	1.28
Diseases of the nervous system					18	11	29	1.43
Diseases of the eye	5		5	47.62	1,606	21	1,627	80.02
Diseases of the ear					118	8	126	6.20
Diseases of the nose					10	3	13	.64
Diseases of the respiratory organs	1		1	9.52	39	8	47	2.31
Diseases of the circulatory organs	1		1	9.52	501	26	527	25.92
Diseases of the digestive system					538	2	540	26.56
Diseases of the lymphatic system					2		2	.10
Diseases of the genito-urinary system	1		1	9.52	853	17	870	42.79
Diseases of the locomotor system	2		2	19.05	404	7	411	20.21
Diseases of the integumentary system	1		1	9.52	144	5	149	7.33
Hernia					160	8	168	8.26
Other injuries	1	1	2	19.05	115	17	132	6.49
Minors	2		2	19.05	533		533	26.21
Over age	1		1	9.52	201		201	9.89
Over height					16		16	.79
Under height					378		378	18.59
Over weight and obesity					49		49	2.41
Under weight					946	2	948	46.67
Imperfect physique	2		2	19.05	868	10	878	43.18
Mental insufficiency		1	1	9.52	20	3	23	1.13
Married or having dependent relatives					142		142	6.98
Illiteracy					43		43	2.11
Imperfect knowledge of English					321		321	15.79
Discharged from previous service for disability or by order					39		39	1.92
Deserters from previous service and ex-convicts					8	1	9	.44
Fraudulent enlistment						100	100	4.92
Character bad or doubtful					224	6	230	11.31
References, none or unsatisfactory					646		646	31.77
General unfitness and undesirable					762		762	37.48
No vacancies					206		206	10.13
Unclassified					117	4	121	5.95
Total	23	3	26	247.62	10,568	278	10,846	533.44

TABLE XXI.—*Nativity of recruits accepted during the year 1893, with ratios per thousand accepted.*

Nativity.	White.		Negro.		Indian.		Total.	
	Number.	Ratios per 1,000 accepted.	Number.	Ratios per 1,000 accepted.	Number.	Ratios per 1,000 accepted.	Number.	Ratios per 1,000 accepted.
United States	5,266	597.53	523	59.34	80	9.08	5,869	665.95
England	338	38.35					338	38.35
Scotland	65	7.38					65	7.38
Wales	8	.91					8	.91
Ireland	841	95.43					841	95.43
Canada	189	21.45			1	.11	190	21.56
Other British possessions	13	1.48	1	.11			14	1.59
France	22	2.50					22	2.50
Belgium	9	1.02					9	1.02
Holland	12	1.36					12	1.36
Denmark	112	12.71					112	12.71
Norway	73	8.28					73	8.28
Sweden	139	15.77					139	15.77
Germany	812	92.14					812	92.14
Switzerland	64	7.26					64	7.26
Austria	71	8.06					71	8.06
Bohemia	22	2.50					22	2.50
Hungary	9	1.02					9	1.02
Poland	33	3.74					33	3.74
Russia	80	9.08					80	9.08
Finland	10	1.13					10	1.13
Italy	13	1.48					13	1.48
Other countries	7	.79					7	.79
Total	8,208	931.35	524	59.46	81	9.19	8,813	1,000.00

TABLE XXII.—*Average height, weight, and chest measure of 8,813 recruits*

Age.	Whole number examined.				Average height (in inches).			
	White.	Negro.	Indian.	Total.	White.	Negro.	Indian.	Total.
16	5			5	66.20			66.20
17	7		2	9	66.18		66.88	66.34
18	245	7	8	260	67.26	66.32	68.19	67.26
19	202	6	4	212	67.64	66.21	69.88	67.65
Under 20 (average, 18.4)	459	13	14	486	67.40	66.27	68.48	67.40
20	181	9	4	194	67.63	66.92	68.31	67.61
21	1,742	78	12	1,832	67.53	67.26	69.50	67.53
22	936	45	4	985	67.62	67.34	67.38	67.60
23	680	34	5	719	67.56	67.29	66.45	67.54
24	551	24	4	579	67.65	67.23	69.50	67.65
20 to 24 (average, 21.9)	4,090	190	29	4,309	67.58	67.27	68.52	67.57
25	483	20	4	507	67.52	67.89	68.31	67.54
26	553	53	5	611	67.40	67.21	66.10	67.37
27	441	38	4	483	67.52	67.03	67.19	67.48
28	347	35	5	387	67.43	67.34	69.60	67.45
29	278	20	9	307	67.37	67.35	69.33	67.43
25 to 29 (average, 26.7)	2,102	166	27	2,295	67.45	67.29	68.31	67.45
30	134	14	5	153	67.53	67.14	66.85	67.47
31	206	22	1	229	67.54	66.83	70.50	67.48
32	159	15	1	175	67.38	67.37	70.00	67.40
33	122	15		137	67.07	67.37		67.10
34	119	6	1	126	67.20	65.17	70.00	67.12
30 to 34 (average, 31.8)	740	72	8	820	67.37	66.98	68.09	67.34
35	59	7		66	67.00	67.07		67.01
36	83	4	2	89	67.35	65.75	65.13	67.22
37	68	17	1	86	66.87	66.69	70.75	66.88
38	67	4		71	67.49	68.00		67.52
39	51	7		58	66.64	66.29		66.78
35 to 39 (average, 36.9)	328	39	3	370	67.14	66.72	67.00	67.09
40 to 49 (average, 43.7)	427	40		467	67.13	66.88		67.11
50 and over (average, 52.5)	62	4		66	67.38	67.06		67.36
Average, 25.9	8,208	524	81	8,813	67.47	67.14	68.35	67.46

accepted during the year 1893 (white, 8,208; negro, 524; Indian, 81).

Average weight (in pounds).				Average chest measure (in inches).							
White.	Negro.	Indian.	Total.	White.		Negro.		Indian.		Total.	
				Expiration.	Inspiration.	Expiration.	Inspiration.	Expiration.	Inspiration.	Expiration.	Inspiration.
129.00	....	....	129.00	30.70	34.10	....	....	....	....	30.70	34.10
126.00	....	128.50	126.56	31.39	34.32	....	....	32.50	35.38	31.64	34.56
136.47	141.71	148.88	136.99	33.20	35.91	32.86	35.32	33.38	36.88	33.20	35.93
138.93	131.83	150.75	138.95	33.44	36.31	32.33	34.92	34.50	37.88	33.43	36.30
137.31	137.15	146.50	137.57	33.25	36.04	32.62	35.13	33.57	36.95	33.25	36.04
140.72	137.78	135.75	140.48	33.62	36.39	34.14	36.67	33.31	35.81	33.64	36.39
138.04	145.71	152.42	138.46	33.93	36.71	33.69	36.22	34.92	37.73	33.93	36.69
143.79	145.82	148.25	143.90	34.15	36.95	34.04	36.57	33.88	36.88	34.15	36.94
145.06	147.06	155.80	145.23	34.36	37.16	34.07	36.68	34.80	37.65	34.35	37.14
145.34	145.79	154.75	145.43	34.39	37.30	34.56	37.04	34.38	36.88	34.40	37.29
141.63	145.61	150.45	141.86	34.10	36.90	33.97	36.51	34.46	37.22	34.10	36.89
145.41	148.95	152.00	145.60	34.51	37.40	34.38	36.91	34.75	37.88	34.51	37.39
146.05	149.49	157.20	146.44	34.39	37.30	33.90	36.59	36.50	39.00	34.36	37.25
146.15	147.42	145.25	146.24	34.47	37.41	34.28	36.99	34.88	37.56	34.46	37.38
147.66	148.97	52.60	147.84	34.60	37.50	34.01	36.57	35.15	38.40	34.55	37.43
146.58	149.35	164.89	147.30	34.52	37.41	34.08	36.80	35.67	38.67	34.53	37.41
146.26	148.83	156.37	146.56	34.48	37.39	34.09	36.74	35.47	38.40	34.47	37.36
147.31	159.64	154.20	148.67	34.64	37.58	34.66	37.38	35.20	37.90	34.66	37.57
148.47	152.50	150.00	148.86	34.79	37.73	34.49	37.15	33.00	36.50	34.75	37.67
148.14	149.93	167.00	148.41	34.80	37.75	34.28	37.00	33.00	36.50	34.74	37.69
146.80	151.13	....	147.27	34.55	37.43	34.43	36.93	....	....	34.54	37.38
151.13	138.33	164.00	150.63	34.98	37.89	33.71	36.21	36.00	39.00	34.92	37.82
148.34	151.89	156.50	148.73	34.76	37.69	34.40	37.04	34.75	37.69	34.72	37.63
149.58	146.86	....	149.29	34.83	37.79	33.96	36.64	....	....	34.74	37.67
154.30	158.75	129.00	153.93	35.01	38.58	35.63	37.94	32.50	35.00	34.98	38.47
146.31	148.71	164.00	146.99	34.52	37.32	34.28	36.81	36.00	39.00	34.49	37.24
155.22	160.00	....	155.49	35.76	38.59	35.18	37.63	....	....	35.73	38.54
146.53	156.86	....	147.78	34.69	37.34	34.21	36.64	....	....	34.63	37.26
150.77	152.03	140.67	150.82	34.98	37.99	34.44	36.95	33.67	36.33	34.91	37.86
151.03	150.78	....	151.00	35.08	37.90	34.21	36.73	....	....	35.00	37.80
150.35	157.75	....	150.80	35.39	38.10	34.38	37.13	....	....	35.33	38.05
144.10	148.25	151.98	144.42	34.31	37.16	34.09	36.68	34.64	37.58	34.30	37.13

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